UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

4WD-SSMB

MEMORANDUM

SUBJECT: Yellow Water Road Dump Superfund Site
Five Year Review Report

FROM: Mindy M. Gardner, RPM
North Florida Section
South Site Management Branch

THRU: Curt Fehn, Chief
South Site Management Branch

Joanne Benante, Chief
North Florida Section
South Site Management Branch

TO: Richard D. Green, Director
Waste Management Division

Please find attached, the Five-Year Review Report (Report) for the Yellow Water Road Dump Superfund Site in Jacksonville, Duval County, Florida. Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, requires that if a remedial action is taken that results in any hazardous substances, pollutants, or contaminants remaining at the site, the Environmental Protection agency (EPA) shall review the remedial action no less often than each five years after initiation of the remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

EPA issued two Records of Decision (RODs) to document the cleanup remedies selected for the Yellow Water Road Dump Superfund Site. The first ROD was designated as Operable Unit 1 and addressed the remediation of PCB-contaminated soil. The OU1 ROD was signed on September 28, 1990. The second ROD was designated as OU2 and addressed remediation of groundwater. The OU2 ROD was signed on June 30, 1992.

The remedies selected for OU1 and OU2 at the Yellow Water Road Dump Superfund Site are still effective and do continue to protect human health and the environment. The wastes that were treated and placed back on-site have effectively been immobilized. After several quarters of post remedial groundwater monitoring, performance standards were met and, subsequently, the monitoring wells of OU2 were abandoned. Currently, two monitoring wells are sampled semi-annually to ensure the effectiveness of OU1 and the site is inspected semi-annually to ensure the effectiveness of OU2. In the future, these two groundwater wells will be sampled annually and inspection and maintenance of the landfill will continue semi-annually to ensure long-term protectiveness.

The attached Report, prepared by the U.S. Army Corps of Engineers, documents the current conditions at the site and states that the RODs have been implemented and that the remedy remains protective and poses no unacceptable risk to human health and the environment. EPA concurs with this Report and the conclusions contained within the Report.

Attachment

Approved by: _____ Date: 9/13/00

Richard D. Green, Director
Waste Management Division
U.S. EPA, Region 4

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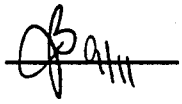
Attachment

Approved by: _____ Date:_____

Richard D. Green, Director
Waste Management Division
U.S. EPA, Region 4

GARDNER

BENANTE



FEHN

GREEN

ROUTING AND TRANSMITTAL SLIP		September 8, 2000
TO: BENANTE		
FEHN		
GREEN		
LAST - GARDNER		

ACTION: **Yellow Water Road Superfund Site**
Jacksonville, Duval County, Florida.

Attached is the Five-Year Review Report.

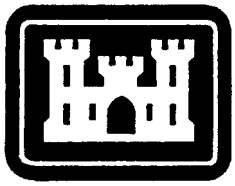
EPA issued two Records of Decision (RODs) to document the cleanup remedies selected for the Yellow Water Road Dump Superfund Site.

-Operable Unit 1 - Addressed remediation of PCB-contaminated soil
September 28, 1990
-Operable Unit 2 - Addressed remediation of groundwater
June 30, 1992

Selected remedies remain effective and protective of human health and the environment. Currently, two monitoring wells are sampled semi-annually to ensure the effectiveness of OU1 and the site is inspected semi-annually to ensure the effectiveness of OU2. In the future, these two groundwater wells will be sampled annually and inspection and maintenance of the landfill will continue semi-annually to ensure long-term protectiveness.

This report requires your approval.

FROM: Mindy M. Gardner, North Florida Section
South Site Management Branch



US Army Corps of Engineers
Jacksonville District

Superfund Five-Year Review Report

Yellow Water Road Site
Baldwin, Duval County, Florida

Prepared for
U.S. Environmental Protection Agency, Region IV
August 2000

EPA Five-Year Review Signature Cover

Preliminary Information

Site name: **Yellow Water Road Site**			EPA ID: **FLD980844179**
Region: **04**	State: **Florida**	City/County: **Duval County**	
LTRA* (highlight): Y **N**		Construction completion date: **9/18/96**	
Fund/PRP Lead: **PRP**			NPL status: **Final**
Lead agency: **EPA, Region 4**			
Who conducted the review (EPA Region, state, Federal agencies or contractor): **US Army Corps of Engineers, Jacksonville District**			
Dates review conducted: From: **6/1/00 To: 7/13/00**			Date(s) of site visit: **6/27/00**
Whether first or successive review: **First Review**			
Circle: **Statutory** Policy	Due date: **5/9/01**		
Trigger for this review (name and date): **Initiation of Remedial Action, 5/9/96**			
Recycling, reuse, redevelopment site (highlight): Y N			

Deficiencies:

One minor deficiency was identified. See Section VII: Deficiencies.

Recommendations:

Recommendations are provided in Section VIII: Recommendations.

Protectiveness Statement(s):

The selected remedy, as executed, currently remains protective of human health and the environment. Continued site inspections and groundwater monitoring should be conducted to ensure long-term protectiveness.

Other Comments:

None.

Signature of EPA Regional Administrator or Division Director, and Date

Signature 18 SEP 00 Date

RICHARD D. GREEN, DIRECTOR
WASTE MGT. DIVISION

Name and Title

Yellow Water Road Site
Baldwin, Duval County, Florida
Superfund Five-Year Review Report

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List of Acronyms and Abbreviations

AEC	American Electric Corporation
AEEC	American Environmental Energy Corporation
APEC	American Environmental Protection Corporation
ARAR	Applicable, or Relevant and Appropriate Requirements
B/Ns	Base Neutrals
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulation
COC	Contaminant of Concern
CRA	Conestoga-Rovers & Associates
DOD	Department of Defense
DRMS	Defense Reutilization and Marketing Service
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FS	Feasibility Study
GAC	Granular Activated Carbon
HRS	Hazard Ranking System
mg/kg	milligram per kilogram
MW	Monitoring Well
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PAH's	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
ppm	parts per million
PQL	Practical Quantification Limit
psi	pounds per square inch
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SJRWMD	St Johns River Water Management District
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
TSD	Treatment Storage and Disposal
ug/l	microgram per liter
USACE	United States Army Corps of Engineers
UST	Underground Storage Tank
VOC	Volatile Organic Compound
YWR	Yellow Water Road

Yellow Water Road Site
Baldwin, Duval County, Florida
Superfund Five-Year Review Report

I. Introduction and Purpose

General

The U.S. Army Corps of Engineers, Jacksonville District (USACE), on behalf of the U.S. Environmental Protection Agency (EPA), Region 4, has conducted a Five-Year Review of the remedial actions implemented at the Yellow Water Road (YWR) Site near Baldwin, Florida. This report documents the results of that review. The purpose of this Five-Year Review is to determine whether the remedial actions at the YWR Site remain protective of human health and the environment. The methods, findings, and conclusions of the review are documented in this report.

Authority

This review is required by statute. Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and Section 300.430 (f) (4) (ii) of the National Oil and Hazardous Substance Contingency Plan (NCP), require that periodic (no less than every five years) reviews be conducted for sites where hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure following the completion of remedial actions.

This is the first Five-Year Review for the YWR Site. The trigger for this statutory review is the initiation of remedial action (RA) at the Site, signified by the actual RA start date shown in EPA's CERCLIS/WasteLAN database, May 9, 1996. The actual due date of the first Five-Year Review is May 9, 2001. All remedies for the Site have been executed; there are no ongoing remedial actions at this Site.

Local Repository

A copy of this 5-Year Review Report will be placed in the EPA Region IV Record Center in Atlanta, GA, as well as the local information repository for the YWR Site. The location of the local information repository is:

Baldwin Town Hall
10 U.S. 90 West
Baldwin, Florida 32234
(904) 266-4221

II. Site Background

The background information presented in this section is a summary and synthesis of material contained in the two Record of Decisions (RODs) as well as numerous other reports, both pre-remedial and post-remedial. It is not the purpose of this section to present a detailed description of the Site background, since this has already been accomplished in other reports (see Attachment A).

A. Site Description

Location

The YWR Site is located off Yellow Water Road (Florida State Road 217) one mile south of Baldwin, Florida. The following land owners are noted at the time of this Five Year Review. Mr. Hyman owns property adjacent to and surrounding the monolith. Mr. Tyre owns property to the east of Mr. Hyman's property and Ameristeel Corporation owns property to the south, west, and north of the Mr. Hyman's property.

A Site Location Map is presented as Figure 1.

Site Layout

The Site encompasses approximately 14 acres of predominantly vegetated land with limited topographical relief. Located on Site are two residential buildings consisting of a one story single family dwelling and a house trailer, which are occupied by the Hyman and Tyer Jr. families, respectively. Assorted multi-purpose outbuildings are associated with the two residences and include storage sheds, pump enclosures, and a carport.

A Site Layout map, which is representative of the Site is presented as Figure 2.

Topography

The Site area is composed of mixed vegetation ranging from grassland and marshy areas to densely treed regions. The topography of the Site is very flat. Prior to installation of the monolith, surface elevations across the Site did not vary by more than one or two feet.

Drainage and Surface Water

The dominant body of water nearest the Site is the St. Johns River. There are no discharge areas on the Site or immediately down-gradient from the Site. A creek is located to the north of the Site that flows on a seasonal basis. The creek bed was

dry during the date of the inspection.

Site Geology and Hydrogeology

The YWR Site is underlain by approximately 75 feet of unconsolidated sand, silt, and clay. Below this is an approximately 20-foot thick layer of coquine limestone and calcareous sandstone. This is underlain by the Hawthorn Formation, a thick sequence of silty clay, clayey sand, and sandy limestone. A geologic cross-section, which is generally representative of local and on-site geology, is presented as Figure 3.

There are two major aquifer systems underlying the YWR Site, the shallow aquifer and the Floridan aquifer systems. These aquifers are separated by low permeability sections of the Hawthorn Formation.

The shallow aquifer system consists of sands, limestone, and shell beds. Water from the shallow aquifer is considered of adequate quality for domestic use. Recharge of the shallow aquifer is primarily by rainfall. Most water supply wells in the Yellow Water Road area are approximately 80 to 150 feet deep.

The Floridan aquifer is the major source of groundwater in northeast Florida. The Floridan aquifer is recharged through sinkholes and by downward leakage from surface water bodies and the shallow aquifer where the aquitard is thin or absent. Based on available information, there are no sinkholes on or within the vicinity of the YWR Site, and recharge to the Floridan aquifer through the overlying Hawthorn Formation is considered to be very low.

B. Site Chronology

History of Operations

Prior to commercial development, the Site was part of a dairy farm operation owned by Mr. Hardlee Spence. In the late 1940s, Mr. Robert Tyer purchased the Site for eventual commercial development. Commercial development of the Site began in the fall of 1981 as American Environmental Energy Corporation (AEEC) entered into a joint venture with two other corporations, the American Electric Corporation (AEC) and the American Environmental Protection Corporation (APEC), with the intent of moving an incinerator to the Site and obtaining a permit under the Toxic Substances Control Act (TSCA) to incinerate Polychlorinated Biphenyls (PCBs). The principal individuals involved in this joint venture were Mr. Robert Tyer of AEEC and Mr. Maxwell Cobb of AEC.

As part of this enterprise, PCB contaminated liquids and equipment were stored at the Site. Even though the incinerator permit was never obtained, PCB

contaminated materials continued to be stored on site.

By October 1982, the joint venture had parted ways and AEEC and Mr. Tyer sued AEC and Mr. Cobb obtaining a restraining order preventing Mr. Cobb from entering Site premises. Mr. Tyer and AEEC then salvaged valuable metals such as copper from the transformer carcasses, spilling PCB liquids and causing soil contamination at the Site.

Enforcement and Compliance

In 1982, a customer of AEC, Dickerson Asphalt Company, filed suit against the Department of Defense (DOD) alleging that PCB liquids sent by the DOD to AEC were eventually sold to Dickerson through a third party as waste oil. The lawsuit and the conditions noted by the EPA TSCA inspectors led EPA, in cooperation with the FBI, to begin criminal investigation of the operations of AEC and Mr. Cobb.

At a criminal trial, AEC had reported to the DOD that they had disposed of transformers at a TSCA-approved facility when they had instead placed the transformers at the Yellow Water Road Site. Although the defendants were acquitted by a jury on these charges in May 1984, guilty pleas were entered by AEC employees.

In the fall of 1984, Duval County cited Mr. Tyer, as president of AEEC, for violations of local PCB storage ordinances. The County ordered Mr. Tyer to remove all PCBs and PCB contaminated items, to investigate the Site to determine the extent of contamination, and to determine the cleanup and monitoring activities which were needed. Mr. Tyer informed the County that he was financially unable to meet these demands, and EPA's Emergency Response and Control Section was called in to respond.

In November 1984, the USEPA determined that conditions at the Site presented an imminent and substantial threat to human health and the environment and initiated emergency removal actions. At the outset of the initial removal action conducted by EPA, the PCB contaminated materials stored at the Site included 719 electrical transformers and a large amount of PCB contaminated liquid. During this removal action, the transformers were drained, steam cleaned, and stored on-site, and approximately 100,000 gallons of PCB contaminated fluids were drained to on-site holding tanks. Approximately 3,000 cubic yards of soil contaminated with PCBs was also excavated and stockpiled on a concrete pad.

In order to complete the removal action, EPA secured the Site by covering the stockpiled soil with a synthetic protective covering and locking the gate.

On April 15, 1985, EPA completed a Hazard Ranking System (HRS) package for the

Site. The aggregate HRS score derived for the Site was 30.26. This score was based on the groundwater route score of 52.35 and a surface water score of 0.00. The air route was not evaluated, nor were the fire and explosion hazards or the direct hazard rated.

On June 14, 1985, EPA Region IV issued an order under Section 106 of CERCLA to Mr. Tyer, ordering him to cease various site-related activities. This order restricted the removal, salvaging, cleaning or emptying of the transformers on site without proper notification to the officials listed in the order.

The Yellow Water Road Site was proposed for the National Priorities List (NPL) on September 18, 1995 and the Site was placed on the NPL on June 10, 1986. Ranked by its HRS score, the Site was listed 658th out of 888 sites listed on the NPL in June 1986.

In March 1987, EPA sent notice and demand letters to 67 Potentially Responsible Parties (PRPs) identified as generators of the PCB contaminated materials found at the Site. By May 1987, 53 of the 67 PRPs had joined together and formed the Yellow Water Road Steering Committee (Steering Committee). Later that year, EPA and the Steering Committee entered into an Administrative Order by Consent to conduct a Remedial Investigation/Feasibility Study (RI/FS).

In May 1988, EPA and the Steering Committee entered into an additional Administrative Order by Consent, under which the Steering Committee undertook an interim surface removal action at the Site under EPA oversight. This removal action was completed in July 1988. The removal activities included the demolition of an on-site warehouse, disposal of the resulting debris and the previously stockpiled contaminated soil, off-site incineration of 78,854 gallons of PCB containing liquids, disposal of 704 transformers, and disposal of 18,690 pounds of potential PCB capacitors. The PCB contaminated soil was transported to Chemical Waste Management's permitted disposal facility located in Emelle, Alabama. The PCB contaminated liquids were transported by rail to SCA in Chicago, Illinois for incineration.

Conestoga-Rovers & Associates (CSA), acting on behalf of the Steering Committee, performed the RI/FS field work, again under EPA oversight. These field activities were conducted at the Site from November 1988 to March 1990. The resulting RI and FS Reports were submitted and approved by EPA in April and August 1990, respectively. Based on these documents, EPA determined that additional data were needed to fully evaluate the extent of groundwater contamination. As a result, EPA separated the cleanup into two Operable Units, one for soils and sediments and one for groundwater. EPA proposed a cleanup plan for Operable Unit One (OU1) (soils and sediments) in August 1990 and selected the remedy on September 29, 1990.

Concurrent with the release of the OU1 Record of Decision (ROD), the Steering Committee began additional OU2 (groundwater) field investigations. The additional OU2 field work was conducted in two separate phases in January 1991 and October 1991. The resulting OU2 RI and FS reports were submitted and approved by EPA in March and April 1992, respectively.

On June 30, 1992, the ROD for OU2 was signed, identifying Alternative 5 from the FS as the recommended remedy. The Remedial Design (RD) for OU 1 was completed in November 1992. Remedial action (RA) for the OU1 remedy commenced in 1996. All remedial actions were completed by September 1996 and EPA approved the Remedial Action Report on February 16, 1997. Subsequently, EPA signed the Final Close-Out Report on May 20, 1998 and a Notice of Intent to Delete (NOID) was published on December 23, 1998 (63 F.R. 71052 – 71054). EPA and the FDEP determined that the Site posed no significant threat to public health or the environment and, therefore, that no further remedial measures under CERCLA were appropriate. Subsequently, the Site was deleted from the NPL on May 18, 1999.

The chronology of the major actions at the YWR Site is summarized in Table 1. The results of Site investigations are presented in the next section. A listing of site documents reviewed is provided in Attachment “A”.

III. Results of Site Investigations

A. General

Remedial Investigation

Conestoga-Rovers & Associates (CRA), acting on behalf of the Steering Committee, performed the initial Remedial Investigation (RI) field work. The field activities were conducted at the Site from November 1988 to March 1990. This section is divided into groundwater sampling results, soil sampling results, surface water and sediment, and air.

1. Groundwater Sampling Results

Twenty-two groundwater monitoring wells were installed and sampled during initial remedial investigation field work. These monitoring wells included seven groundwater monitoring well nests (MW-1 – MW-7), comprised of three wells per nest, and individual monitoring well, MW-8A.

Concurrent with the release of the OU1 Record of Decision (ROD), the Steering Committee began additional OU2 (groundwater) field investigations. The additional OU2 field work was conducted in two separate phases in January 1991 and October 1991. Activities included installation and sampling of six additional groundwater monitoring wells and sampling of several existing monitoring wells. Additional monitoring well nests MW -9 and MW-10, consisting of two wells per nest, and individual monitoring well MW-8B was constructed during the first phase of OU2 field work. The final monitoring well, MW-11A, was constructed during the second phase of OU2 field work. The resulting OU2 RI report was submitted and approved by EPA in March 1992.

Twenty-eight monitoring wells have been installed at the Site in both the upper sand, the lower sand, and the limestone unit. The upper sand water table unit wells are identified as “A” wells, the lower sand water table unit wells are identified as “B” wells and the limestone unit wells are identified as “C” wells. Figure 4 provides the location of these 28 monitoring wells.

Based on the results of the groundwater from the RI field work, the following results were concluded:

- No significant groundwater volatile organic compounds exist at the Site;
- No samples contained unqualified base/neutrals above acceptable levels and thus base/neutrals were omitted from subsequent monitoring;

- No inorganics were detected above acceptable levels and therefore inorganics were omitted from subsequent monitoring;

- PCBs were detected in the groundwater and represent the only chemical of concern at the Site.

During the OU2 Supplemental Groundwater Investigation it was determined that PCB contamination of the Upper Water Table Unit ("A wells") is confined to a small source area located within Site boundaries. Monitoring data confirm that the Lower Water Table Unit has been marginally impacted by PCBs in the source area (contamination is limited to MW-6B and MW-7B). There is no indication of contaminant migration in the Lower Water Table Unit to areas adjacent to, or downgradient of, the source area. PCBs were detected above the MCL of 0.5 ppm on a consistent basis in only four monitoring wells, MW-6A, MW-6B, MW-7A, and MW-7B. The non-detect sampling results from MW-11A, which is located 20 feet down-gradient of MW-6A, reveals that PCBs within the aquifer have not migrated down-gradient from MW-6A. This groundwater monitoring data demonstrates that PCB migration is being effectively attenuated, limiting groundwater contamination to the source area.

2. Soil Sampling Results

The soil sampling phase was designed to establish horizontal and vertical contaminant boundaries throughout the Site. Sampling stations for the soil borings were located on the nodes of a 100-foot square grid covering all cleared and unobstructed areas of the Site including the fenced former operational area. The primary east-west baseline for the grid was established in a main surface water swale running parallel to the Site access road. Figure 5 illustrates the soil boring locations for the Site. Soils were sampled for volatile organic compounds (VOCs), base/neutral (B/N) organic compounds, and PCBs.

The VOCs that were identified above the Practical Quantification Limit (PQL) included acetone, methylene chloride, and toluene. Only 23 of the 105 soil samples analyzed were found to contain VOC concentrations above the PQL.

The predominant base/neutrals found in surficial soil samples can be generally divided into phthalate esters and polynuclear aromatic hydrocarbons (PAHs). Only 12 of the 96 soil samples analyzed for B/Ns contained phthalate esters above the PQL and only 3 of the 96 soil samples analyzed for B/Ns contained detectable PAH concentrations. The location of the PAH concentrations indicated that this was a result of automotive and/or heavy equipment oil drippings resulting from the movement of vehicles around the Site.

All PCBs found at concentrations greater than 1.0 mg/kg at the Site were located within, adjacent to, or north and west of the former operational area. Fifty-eight of the 151 soil samples analyzed for PCBs had detectable concentrations of PCBs, ranging in concentrations from the PQL to 660 mg/kg. Few sampling locations contained PCB concentrations in excess of 1.0 mg/kg and only 10 locations contained PCB concentrations in excess of 10.0 mg/kg. The presence of residual PCBs was primarily isolated to areas of known PCB handling operations.

3. Surface Water and Sediments

Surface water and sediment samples were collected in drainage courses on-site and down-gradient from the Site so that potential pathways or receptors of surficial contaminant migration could be identified. Because the Site is topographically very flat, the sample locations were selected after a local storm event. Surface water and sediment sampling locations for the eastern area of the Site are shown on Figure 6.

Low-level VOC contamination was found in surface water and sediment samples. B/N extractable compounds were limited to a few phthalate ester compounds. Sediment sample PCB concentrations ranged from ND to 60.5 mg/kg. PCB concentrations detected in surface water were low and were limited to three locations, all of which were associated with PCB-containing sediments. The presence of PCBs in these samples may be due to the presence of contaminated particulates (all samples were unfiltered) and/or low-level solubilization of PCBs from underlying contaminated sediments.

By analyzing the surface water and sediment PCB data, it is apparent that the predominant mode of overland PCB transport at Yellow River Road is by sediment transport in conjunction with surface water flow.

4. Air

Air monitoring data obtained during the 1988 Surface Removal Action indicated that airborne PCBs were not problematic at this Site. In addition, PCBs were not detected during air monitoring conducted in support of the RI Health and Safety Program. Evaluation of these data, supported by historical information, leads to the conclusion that airborne contaminant transport is not a significant migration pathway at the YWR Site.

Feasibility Study

Operable Unit 1 Alternatives.

An evaluation of five different alternatives was provided in the Feasibility Study

report. These alternatives included methods to remediate soils to the remedial action goal of 10 ppm for PCB contamination. The alternatives included:

Alternative 1 – No Action;
Alternative 2 – Excavation/Disposal – Landfill
Alternative 3 – Excavation/Disposal – Incineration
Alternative 4 – Excavation/Solvent Wash/Treatment/Disposal
Alternative 5 – Excavation/Solidification/Stabilization

Of these five alternatives, EPA determined that Alternative 5 was the most appropriate remedy for the YWR Site. Upon completion of the Remedial Design, approximately 3,560 cubic yards of PCB contaminated soils/sediments exceeding 10 ppm were to be excavated and batch treated by solidification and stabilization methods to the established clean-up levels of PCB in a TCLP leachate test. The stabilized and solidified soil/sediment would be placed back into the former operational area, covered with a vegetated one-foot thick soil cover. The excavated area would then be backfilled with clean fill (soils containing less than 1 ppm of PCBs).

Operable Unit 2 Alternatives

An evaluation of five different alternatives was provided in the Feasibility Study report. These alternatives included methods to remediate the groundwater to MCLs and included the following:

Alternative 1 – No Action
Alternative 2 – Institutional Controls and Monitoring
Alternative 3 – Filtration/Carbon Adsorption (GAC)
Alternative 4 – Filtration/UV Oxidation
Alternative 5 – Contingent Filtration/Carbon Adsorption (GAC)

Of these five alternatives, EPA determined that Alternative 5 was the appropriate remedial alternative for groundwater at the YWR Site. The initial remedial activities for Alternative 5 included: institutional controls, the construction of four additional down-gradient monitoring wells, the installation of a security fence around all source area wells, and the implementation of a long-term groundwater monitoring program. If a groundwater recovery and treatment system was required the additional remedial activities would have included: recovery wells in both the Upper and Lower Sand Units, filtration units, granular activated carbon (GAC) treatment system, disposal system, and transportation and disposal of the GAC and filtration waste to a TSCA compliant Treatment Storage and Disposal facility (TSD).

B. Contaminant of Concern

PCB compounds were determined to be the only contaminant of concern (COC) for surface water and sediments, soil, and groundwater. There were no contaminants of concern for air. PCBs refer to a group of manufactured chemicals that contain 209 individual chlorinated chemicals. PCBs are either oily liquids or solids that range in color from clear to light yellow, and have no known smell or taste. Utilized for their low electrical and high thermal conductivity, high boiling point, chemical stability, and flame retardant properties, PCBs were manufactured in the United States from 1929 to 1977. As evidence of their danger to human health and the environment, PCBs became a broadly regulated chemical substance. PCB exposure can result in mild reversible injuries to skin and organ systems, while higher concentrations can result in carcinogenesis. From a carcinogenic standpoint, there is adequate evidence for the PCBs to be classified as a B2 carcinogen "Probable Human Carcinogen". This classification indicates that there exists evidence of carcinogenicity in animals and inadequate but suggestive evidence of cancer in humans by ingestion and inhalation or dermal contact. The slope factor for PCBs ranges between 0.04 to 2 mg/kg-day (EPA 1996).

C. Potential Pathways for Contaminant Migration and Exposure

Pre-Remediation

The following possible pathways for future exposure to humans (assuming no remedial action) were identified in the ROD:

- ingestion of groundwater from a private well;
- incidental ingestion of soils;
- dermal adsorption of soils;
- inhalation of fugitive dusts.

Post-Remediation

As a result of remedial actions at the YWR Site, there are no remaining pathways for human exposure to the COC. This is assuming that stabilized/solidified contaminants entombed within the monolith remain in their immobile, non-leachable state, and that land use restrictions in the area of the monolith remain in place.

D. Summary of Site Risks

Pre-Remediation

Human Risks:

Potential human exposure to site-related contaminants (PCBs) was evaluated by two main pathways. Potential points of human exposure considered were inhalation or direct contact with surface soils and ingestion of contaminated groundwater.

Potential soil exposure was estimated using the conservative assumptions of site development and exposure scenarios in the absence of further remedial measures. Residential development of the on-site secure area was found to pose an estimated additional lifetime cancer risk of 7.1×10^{-4} to potential future residents. Development of this area into parklands would result in a potential additional lifetime cancer risk of 1.1×10^{-4} for recreational users of this area.

The groundwater exposure evaluation was performed after the remediation of OU1 was complete. During this evaluation it was determined that there were no exposure to humans occurring. Therefore, the future use scenario was used for the exposure assessment to groundwater. Residential development of the on-site secure area as well as down-gradient areas was found to pose unacceptable additional lifetime cancer risks. For off-site development, the risk due to ingestion of groundwater from MW-7 was 8.4×10^{-4} and 4.2×10^{-4} based on sampling results during Phases III and IV, respectively. MW-6, which is located within the on-site fenced area, revealed risks of 1.5×10^{-3} and 3.1×10^{-3} based on Phase III and IV sampling results, respectively.

Environmental Risks:

The study area of concern for environmental risks included the surficial soils located within, and west of, the former operational area, as well as the soils lining the north drainage swale running parallel to the Site access road. Sediment contamination was also of concern in areas within and adjacent to the former operational area.

During the Remedial Investigation/Feasibility Study the evaluation of ecological impacts determined that the PCBs present in the surficial soils and sediments at the YWR Site would affect very limited receptor populations or habitats. The contaminated soil and sediments on Site pose a small overall threat to terrestrial biological communities. In addition, there are no complete pathways for exposure of critical species to site-related groundwater sources.

Post-Remediation

As a result of remedial action, COC source areas and pathways were effectively remediated. Consequently, there are no known risks to humans or the environment at present. Remedial actions executed at the Site are further described in Section IV, Paragraph C, and in Section VI of this report.

IV. Summary of Response Actions

A. Remedial Objectives

The objectives of the recommended remedy for soil, surface water, and groundwater at the YWR Site, as stated in the ROD for OU1 and OU2 were:

- protect human health and the environment;
- attain Applicable or Relevant and Appropriate Requirements (ARARs);
- provide a cost-effective remedy;
- utilize technologies which offer long-term effectiveness.

The remediation goal for PCB contaminated soils at the Yellow Water Road Site is 10 ppm PCBs. Under definition set out in 40 C.F.R. 761.123, the Yellow Water Road Site would be considered a non-restricted access area for application of the PCB Spill Cleanup Policy. Soils in such a non-restricted access area must be decontaminated to 10 ppm PCBs by weight, excavated to a minimum depth of 10 inches and replaced with clean fill containing less than 1 ppm of PCBs [40 C.F.R. 761.125c(4)(v)].

B. Remedy Selection

General

Based upon consideration of the requirements of CERCLA, available data collected, a detailed analysis of alternatives, and public comments, both EPA and the State determined that for OU1 (soils and sediments) Alternative 5 of the FS and for OU2 (groundwater) Alternative 5 of the FS were the most appropriate remedies for the YWR Site.

The selected remedy for OU1 (soils and sediments) involved these components:

- excavation of soils containing PCBs concentrations at or in excess of 10 ppm;
- on-site treatment of excavated soils by stabilization/solidification;
- placement of excavated areas within the former Operational area of Site;
- backfilling of excavated areas with clean soils (soils containing less than 1 ppm PCBs);
- construction of a one foot thick vegetative soil cover over the treated soil mass (monolith);
- installation of a security fence around the monolith;
- placement and establishment of a vegetative cover over the excavated and backfilled areas of the Site; and
- implementation of maintenance and monitoring plan for the monolith,

vegetative cover and security fence.

Specific performance standards and construction quality control requirements for excavated soils, treatment of contaminated soils and impacted materials were as follows:

- confirmation that soils exceeding the 10 ppm total PCB criteria were properly excavated and appropriately treated;
- confirmation that all final treated soils attained the soil treatment design goals for TCLP-PCB leachability and unconfined compressive strength of 60 µg/l and 50 psi, respectively; and
- confirmation that imported clean soils used for backfilling and Site restoration contained less than 1 ppm total PCBs.

The selected remedy for OU2 (groundwater) involved these components:

- the imposition of institutional controls;
- the construction of two additional groundwater monitoring wells (MW-12A and MW-12B) down-gradient of the former operational area;
- the installation of a security fence around all source area wells (monitoring well nests MW-6, MW-7, and MW-8); and
- the implementation of a long-term groundwater monitoring program to verify the effectiveness of the selected remedy.

If Alternative 5 had been fully implemented, the additional remedial activities would have included:

- design and construction of groundwater extraction wells in both the Upper and Lower Sand Units, located near the western boundary of the former operational area of the Site;
- installation of a groundwater pumping system;
- installation of a groundwater filtration system;
- installation of a GAC treatment system;
- installation of a treated effluent discharge system; and
- transportation and disposal of the GAC and filtration waste to a TSCA compliant landfill or incinerator on an as-required basis.

The ROD for OU1 was executed on September 29, 1990 and the ROD for OU2 was executed on June 30, 1992.

Significant Changes to the Remedy

On April 6, 1998, an Explanation of Significant Difference (ESD) for the OU2 ROD was finalized. The ESD clarified the OU2 ROD specifying that groundwater monitoring would be terminated when the performance standards of 0.5 µg/l PCBs set forth in the OU2 ROD are achieved. Four quarters of post remedial groundwater monitoring data demonstrated that the OU2 performance standards have been attained. On this basis, no further groundwater monitoring associated with OU2 will be required. However, monitoring wells RMW-6A and MW-11A will be retained to evaluate the future effectiveness of the OU1 remedy.

C. Remedy Design

Soils and Sediments (OU 1)

Prior to entering into the October 11, 1995 consent decree with EPA, the responsible parties submitted a Remedial Design Report (CRA, 1992) to the EPA.

In the Remedial Design Report, the design for implementation of all remedial objectives was documented. The objectives for this report is summarized below:

1. to further refine the horizontal and vertical 10 ppm contaminant boundary for total PCBs in soils and sediments;
2. to accurately estimate contaminated soil volumes;
3. to develop acceptable PCB leachate standards for the solidified/stabilized soil monolith consistent with the site characteristics and all available ARARs;
4. to determine, through a bench scale treatability study, the most acceptable solidification/stabilization agent(s) and optimal mix ratio(s);
5. to determine a local cost-effective source of solidification/stabilization agent(s); and
6. to develop final contract drawings and specifications.

1. Delineation of soil contamination. On the basis of soil data compiled during the RI, all areas on site exhibiting surficial soil PCB concentrations exceeding 10 ppm were further delineated in order to determine precise excavation boundaries. In addition, subsurface soil sampling was undertaken at five locations in order to define the vertical excavation boundaries.

The surficial soil results indicate that the extent of surficial soil contamination is confined to several locations within the former operational area and areas immediately to the north and west. In addition, three localized areas of

contamination were found along the northern boundary of the Site, immediately west of the former operational area. Surficial soil PCB concentrations ranged from non-detect to 680 ppm. The surface water swale located immediately to the north of the former operational area acts as a surface water drainage course from the Site. Sediment samples collected from this area have indicated some low-level PCB contamination ranging up to 46.5 ppm. The surficial soil data and sediment sampling locations are shown on Figure 5.

Subsurface soil samples were collected to a depth of six feet below ground surface at five locations on site. Subsurface soil contamination was extremely limited and appeared at a maximum depth of two feet below ground surface at one location. The extent of contamination was limited to the first foot of soil at all remaining subsurface sampling locations.

2. Soil volume estimate. Based on the horizontal and vertical delineation of contaminated soil, it was estimated that 3800 cubic yards of contaminated soil would require treatment.

3. PCB leachate standard. The maximum acceptable PCB leachate concentration was calculated to be 60 micrograms per liter (µg/l). This concentration was calculated using the assumption that the hydraulic integrity of the monolith failed, thereby allowing percolation through the monolith similar to that of a porous un-solidified soil column and using a maximum groundwater PCB concentration of 0.5 µg/l.

4. Solidification/stabilization agent. A Treatability Study was performed to determine the most appropriate reagent and mixture for the solidification/stabilization process. Cement and quicklime were evaluated as potential solidification agents for this program due to their demonstrated effectiveness for solidifying PCBs and their excellent availability. However, during the treatability study for compressive strength testing, all of the quicklime admixtures failed to hydrate to a solid monolithic structure. Consequently, quicklime was eliminated as a solidification/stabilization agent.

Additional leachability testing and compressive strength testing was performed on different water to reagent ratios. Based on this testing, the recommended percentage of reagent was:

Fixing Agent	32%
Water	23.8%*
Soil	44.2%

* Concentration based on a 11.6 percent soil moisture content. Site soils were to be sampled and analyzed for moisture content and the percentage of water added was to be adjusted accordingly.

The recommended fixing agent was Portland Type 1 cement, which is readily available.

Groundwater (OU2)

In accordance with Item 16 of the 1995 Consent Decree, the PRPs prepared and submitted a work plan for the implementation of the non-contingent remedy identified in the OU2 ROD. This work plan consisted of an addendum to the Supplemental Groundwater Remedial Investigation Work Plan of January 1991.

The major components of this Work Plan included:

- construction of four additional groundwater monitoring wells down-gradient of the source area
- abandonment of existing monitoring wells MW-2 (A,B,C), MW-3 (A,B,C), MW-4 (A,B,C) and MW-5(A,B,C).
- implementation of a groundwater monitoring program.

In addition to these three tasks, the PRPs proposed the abandonment and replacement of monitoring well nest MW-6.

D. Remedial Action

Soils and Sediments (OU1)

Excavation of Contaminated Soil

In May 1996 excavation of contaminated soils at the Site commenced. Initial soil excavation began within the former Operational Area (Area I) (see Figure 7). The excavated soils from Area I were transported to Area II to be staged in a temporary stockpile.

Excavation activities proceeded from the southern limits of Area I north to the slough at the northern limit of Area I. Excavations in the northern third of Area II, Area III and Area IV were completed prior to beginning the soil treating activities (see Figures 8 and 9). Soil excavation within the southern two-thirds of Area II was completed following completion of treating the stockpiled soils, thus facilitating access to the soils in this area.

Additional excavations beyond the proposed limits of excavation identified in the approved Work Plan occurred at eight distinct locations. The areal extent of the

initial and supplemental soil excavations are shown in Figures 7, 8, and 9. A total volume of 4,472 cubic yards of contaminated soils was excavated.

Treatment of Contaminated Soil and Sediment

Treatment activities consisted of pre-screening contaminated soils from the temporary soil stockpile, transferring these soils to a pugmill and mixing these soils with water and Portland Type I cement. After a required 100-ton pilot test was performed by the remedial contractor, a full scale treatment commenced using a cement/water/soil mixture of 32/24/44 percent by weight. The treated material was sampled and deposited within the prepared monolith area. All samples of this treated material passed the required performance tests.

Buried Items

Several buried items, consisting of twelve 55-gallon capacity drums and two 500-gallon underground storage tanks (USTs) were located and removed without undue damage to the items.

The contents of the twelve 55-gallon drums were removed, staged, and treated with other excavated soils. Correspondence with FDEP's Tank Compliance Division noted that since the tanks did not currently contain oil, regulated fuels or petroleum products, the tanks could be removed without formal notice to the State. Based on this conversation, and the analytical results for the aqueous sample from one of the tanks, the tanks were removed, emptied, and disposed of with other miscellaneous wastes from the Site.

Accidental Fuel Spill

On July 13, 1996, a cement delivery truck punctured a fuel tank and spilled approximately 60 gallons of diesel fuel in the driveway immediately east of the Site. The FDEP was immediately notified of this spill. On July 16, 1996 and July 18, 1996, Environmental Recovery, Inc. performed emergency response activities for the cement transportation company. The closure report from CURA, Inc. (CURA) states "Based on the field investigation and that no evidence was encountered to suggest that any environmental impact has occurred, CURA therefore recommends that this Site be closed and no further action be deemed necessary. Personal conversations between CRA personnel and FDEP confirmed that "the on-site emergency response contractor had performed a sufficient remedial action".

Roles and Responsibilities During Remedial Activities

The United States Environmental Protection Agency (USEPA) and the Unites States

Army Corps of Engineers (US ACOE) were responsible for monitoring the progress of remedial activities. The Yellow Water Road PRP Group (Private Parties) was responsible for implementing the terms of the Consent Decree. The Private Parties retained Conestoga-Rovers & Associates (CRA) to act as its supervising contractor during all phases of remedial activities. In addition, the Private Parties' Technical Committee Members and Defense Reutilization and Marketing Service (DRMS) representatives made periodic visits to the Site during remedial activities. GNB Environmental Services, Inc. (GNB) was used by the Group to provide soil excavation, solidification/stabilization, cap construction and restoration services. Richard Simmons Drilling Company provided monitoring well abandonment and installation services.

QA/QC

Quality assurance/quality control (QA/QC) procedures included regular site visits by EPA, and testing of QA/QC split samples at a frequency of 5 to 10 percent of the total number field samples for each media of concern. All sampling and testing was conducted in accordance with EPA protocols and/or approved methods.

Effects of Remediation on Physical Characteristics of Site

The Site has been restored to its pre-construction condition with the exception of the newly constructed monolith. The monolith measures approximately eight feet in height at the highest point and covers an area of approximately 1.3 acres. Photographs 1-5, 21 and 22 show portions of the monolith. A permanent equipment decontamination pad was constructed at the eastern entrance to the fenced area and is adjoined by an aluminum maintenance shed and polyethylene tank (Photograph 8). The maintenance shed houses molded samples of treated soil material, monitoring well sampling equipment and other supplies. Photograph 9 shows the equipment in the storage shed.

<u>Groundwater (OU2)</u>

The following work tasks were completed during the non-contingent OU-2 remedial action program:

- abandonment of 15 monitoring wells;
- installation and development of four new monitoring wells and three replacement monitoring wells;
- implementation of the long-term groundwater monitoring program; and
- institutional controls.

Work associated with this was performed during the summer months in 1996.

Monitoring wells nests MW-2 (A,B,C), MW-3(A,B,C), MW-4(A,B,C), MW-5(A,B,C), and MW-6(A,B,C) were properly abandoned. Four point-of-compliance monitoring wells (MW-12(A,B) and MW-13(A,B)) were installed approximately 20 feet down-gradient of monitoring wells MW8-(A,B) and MW-7(A,B), respectively. Three replacement monitoring wells, RMW-6(A,B,C) were installed to replace the abandoned monitoring wells MW-6(A,B,C).

A long-term groundwater monitoring program was implemented at the Site. This program consisted of sampling 18 monitoring wells semi-annually. The first sampling event was conducted in late August 1996. Four quarters of post remedial groundwater monitoring data demonstrated that the OU2 performance standards had been attained.

The St. Johns River Water Management District (SJRWMD) has imposed institutional controls to prevent the exposure to potentially PCB contaminated groundwater. The institutional control implemented at the Site consists of water supply well permitting controls. On February 7, 1995, the YWR Site was designated by the State of Florida as Delineated Area number 16993065. A Delineated Area, as defined in Section 200 of Rule 62-524 of the Florida Administrative Code (F.A.C.), "is a surface area identified pursuant to Rule 62-524.420 of the F.A.C., within which groundwater contamination is known to exist or which encompasses vulnerable areas or areas in which the Department provides a subsidy for restoration or replacement of contaminated drinking water supplies".

The Site-specific water well construction requirements in place for the Yellow Water Road Site Delineated Area and the surrounding areas consist of the following restrictions:

- the prohibition of any water wells screened in the Surficial aquifer system;
- a requirement for installing double-cased water wells to isolate the Floridan aquifer and/or the bedrock aquifer from the Surficial aquifer in areas directly adjacent to, or down-gradient of, the Delineated Area;
- the requirement that water wells located between 1000 and 1500 feet to the east of the Delineated Area be screened in the Floridan or Bedrock aquifers; and
- the requirement that prior to using the new water well, a groundwater sample must be collected and analyzed by the Department of Environmental Health and Rehabilitative Services for the contaminants of concern at the Delineated Area.

E. Operation and Maintenance (O&M)

The O&M program for the YWR Site is designed to ensure that the integrity of the vegetative soil cover, underlying monolith structure, groundwater monitoring wells and miscellaneous items constructed or installed during implementation of the

Remedial Action is maintained. The monitoring program specifically addresses four major areas of concern with regard to post-construction activities. These areas are:

Vegetative soil covered areas;
Site security;
Long-term monolith performance verification; and
Long-term groundwater monitoring.

Landfill (Monolith) O&M

The landfill monolith O&M period began in May 1997. The landfill is inspected on a semi-annual basis. Inspections consist of a complete site walk-through, observing the condition of the site security fence, vegetated soil cover and monolith, monitoring wells and maintenance shed. An inspection log noting these areas is included as Attachment C. If problems are observed in any of these areas, the appropriate repair will be made.

As part of this Five-Year Review, several Site Inspection Reports were reviewed. These reports contain any problems encountered during the reporting period and the activities being taken to rectify these problems. During the first inspection, erosion occurred on the east face of the monolith, an exposed area was observed on the southwest corner of the monolith and distressed vegetation was noted throughout the fenced area of the Site. All of these items were repaired. At the second inspection weed growth was observed on several of the slopes of the monolith and a small tree was observed on the east slope of the monolith. Both the weeds and small tree were removed. Additional erosion on the north and east faces of the monolith was observed during the third inspection with other minor vegetation problems. After corrective actions were performed, there have been no maintenance difficulties other than providing a vegetative cover that can withstand severe weather conditions (i.e., drought conditions). Warning signs posted within the Site security fence were replaced. These signs contain the revised language suggested by the USEPA in a letter dated November 1, 1999 (Photograph 7).

The condition of the landfill was observed during the Five-Year Review Site inspection, held on June 27, 2000. Section V, Paragraph "C" of this report contains the results of that site inspection.

Mr. Walter Pochron of CRA, who represents the PRP, currently conducts the landfill site inspections. After each inspection, a letter report is prepared and sent to EPA Region IV.

Groundwater Monitoring

The groundwater monitoring program commenced in August 1996. Initially, eighteen monitoring wells were being sampled on a quarterly frequency for PCB contamination. After six consecutive quarters of sampling, the PRP's representative proposed to abandon eighteen of the twenty site monitoring wells. The two monitoring wells that were retained for monitoring are MW-6A and MW-11A (Photographs 15 and 16). Both of these wells are shallow monitoring wells that are situated within the monolith. The USEPA approved this proposal and issued an ESD to the OU2 ROD revising the required monitoring. The eighteen monitoring wells were properly abandoned on June 10, 1999. Photograph 14 shows a monitoring well (MW-6C) that has been grouted.

Presently, the two Site monitoring wells are being sampled on a semi-annual basis with the next sampling event scheduled for November 2000. There has not been a detection of PCBs during any sampling event from either of these two monitoring wells.

O&M Costs

Inspection and monitoring are approximately $16,400 per year. This cost includes the semi-annual landfill inspections, semi-annual groundwater monitoring and the development and submission of any reports. Site maintenance costs for the years 2000 through 2004 are estimated to be $10,000 per year. Table 3 provides a breakdown of operation, monitoring, and site maintenance costs.

V. Summary of Site Visit and Findings

A. General

This Five-Year Review consisted of the following activities: a review of relevant documents (see Attachment A, Documents Reviewed), interviews with the EPA Project Manager, the YWR Project Manager, a site inspection, a visit to the local information repository, and preparation of the Five-Year Review report.

B. Interviews

Ms. Mindy Gardner, EPA Region IV Remedial Project Manager for YWR.

Ms. Gardner was interviewed over the telephone and in person. Ms. Gardner has replaced Mr. David Lloyd as the remedial project manager for this Site. The remedial objectives have been met at this Site and therefore the Site was deleted with the Notice of Deletion (NOD) on May 18, 1999.

Mr. Bruce Clegg, Project Manager, Conestoga-Rovers & Associates

Mr. Clegg was interviewed by phone on several occasions and during the Site inspection on June 27, 2000. Mr. Clegg has had extensive involvement with the Site for several years. He currently manages the Site as an agent of the PRPs. Information on site history, remedial actions, and current site status was obtained during the interviews. Mr. Clegg was not aware of any complaints or issues at the community level.

Mr. Bruce Noble, Defense Reutilization and Marketing Services

Mr. Noble was interviewed during the Site inspection on June 27, 2000. Mr. Noble has also been involved with this Site for several years representing the federal government. Mr. Noble stated the federal government will commence payment of operation and maintenance costs in the year 2026 (30 years after closure). Up until this time, other entities are paying for Operation and Maintenance costs. He stated that this is specified in the Consent Decree.

C. Site Inspection

General

The Five-Year Review site inspection for YWR Site was held on June 27, 2000. The weather was warm and partly cloudy.

The following individuals were in attendance:

1. Bruce Clegg, Conestoga-Rovers & Associates, Project Manager
2. Bruce Noble, Defense Reutilization & Marketing Service
3. Bill Neimes, USACE, Jacksonville District, Lead Project Engineer

Mr. Clegg provided site access and escorted the site inspection team throughout the Site. The entirety of the Site could either be viewed or inspected from the top of the monolith. In particular, the following features were inspected or observed: perimeter security fence, monolith, storage building and monitoring wells. Photographs showing current site conditions are presented at the end of this document.

Land use adjacent to the Site is a mixture of residential and undeveloped land. Adjacent to the monolith is a ranch style home and trailer (Photographs 5 and 6). Both of these units are occupied. It is understood that Ms. Hyman lives in the brick home and Mr. Robert Tyer Jr. lives in the trailer. No environmental damage was observed at the Site.

Site Security

An 8-foot chain link perimeter security fence with a barb-wire crown was observed bordering the Site. The fence appeared to be in good condition with no tampering noted. There were several access gates along the fence line, each of these being key locked. The landfill is located approximately ¼ mile from the road and access to the landfill is through a private drive. Unless adjacent areas around the Site are developed, there should be no reason for unauthorized trespassing on this property.

Monolith (stabilized landfill)

The monolith had the appearance of a rectangular mound with top elevation approximately 8 feet above grade and side slopes of approximately 3 horizontal to 1 vertical. The monolith is composed of a stabilized/solidified mixture of PCB contaminated soils and Portland cement, totaling a volume greater than 4,000 cubic yards and covering an area of approximately 1.3 acres. The vegetative cover of the monolith was in fair condition with a stand of native grasses. However, there were areas of the cap which either lacked an adequate stand of grass or the grass was

dead. Most of these barren areas are located on the side slopes of the cap where there is a greater potential for erosion effects. Photographs 2, 5 17, 21 and 22 illustrate some of these barren areas. The grasses within the fenced area and outside of the fenced area appeared to have been recently mowed. No trees or shrubs with deep-penetrating roots were observed on the monolith although there was evidence of dead trunks approximately 3 to 4 inches in diameter along the fence line (Photograph 19). A herbicide appears to have been applied along the fence line as there is no vegetation along either side of the fence line. There was minor evidence of erosion along some of the side slopes. This erosion has been mitigated by the use of geoweb material (Photographs 17 and 18). Photograph 20 shows a borehole created by some animal by the fence line. Mr. Clegg stated that this borehole will be grouted during the site inspection and has since reported that this task has been completed.

Monitoring Wells

Four monitoring wells were observed within the landfill area (Photograph 13). Two of these monitoring wells are abandoned and two monitoring wells are sampled as part of the groundwater monitoring program. The groundwater monitoring program is further discussed in Paragraph “F” of this section, and Paragraph “D” of Section IV. All four monitoring well had protective guards to prevent damage and both operational monitoring wells were in good condition.

D. Local Information Repository

The local information repository for YWR, Baldwin Town Hall, located in Baldwin, Florida was visited on the same day as the site inspection. The documents were located in a storage closet next to the mayor’s office. Two copies of the administrative record, one dated September 16, 1991 and one dated August 26, 1992 were on file. In addition, a final RI Report dated April 1990, a St. Johns Water Management District Technical Assistance Report for Local Government, the O&M Plan, the Remedial Action Report and the Intent to Delete Administrative Record was on file. The documents are readily accessible to the public and are in good order.

E. Review of Applicable or Relevant and Appropriate Requirements (ARARs)

A review of ARARs was performed for the Site in accordance with the draft EPA guidance document, “Comprehensive Five-Year Review Guidance,” EPA 540R-98-050, April 1999.

Documents which were reviewed for the ARARs analysis are as follows:

1. September 28, 1990 OU-1 Record of Decision (Soils), (EPA, 1990)
2. June 30, 1992 OU-2 Record of Decision (Groundwater), (EPA, 1992)
3. Superfund Final Close Out Report, May 20, 1998
4. Notice of Intent to Delete National Priorities List (NPL) Yellow Water Road Dump Superfund Site, November 30, 1998
5. Operation, Maintenance and Monitoring Plan, Groundwater Monitoring Summary and Proposed Well Abandonment, January 20, 1998

ARARs Identified in the RODs Requiring Review:

1. Safe Drinking Water Act

    - Maximum Contaminant Levels (MCL’s), 40 CFR 141 and 143

2. FDEP Water Quality Standards (Chapter 17-550)

The chemical-specific ARARs identified in the ROD for OU1 (Soils and Sediments) were developed through consideration of EPA guidance and Site-specific risk assessment.

The chemical-specific ARARs identified in the ROD for OU2 (Groundwater) for the Site were Federal and Florida State Drinking Water Act Maximum Contaminant Levels (MCLs). The current Federal MCL for PCBs is 0.5 µg/l. Since the signing of the ROD, FDEP’s Drinking Water Standards have been moved from Chapter 17-550 of the Florida Administrative Code to Chapter 62-550. The Federal and FDEP MCLs for PCBs have not changed since the Record of Decisions (RODs) were signed and the MCL for PCBs remains at 0.5 µg/l. EPA has waived the requirements of 40 CFR Part 141 for the groundwater located beneath and in close proximity to the source area. This waiver applied solely to the groundwater and remained in effect until remedial measures provided some advantage in attaining the MCL. Per the final close out report and the groundwater monitoring summary, the MCL for PCBs has been attained at the Site.

Cleanup Goals:

Soil Contaminant	Cleanup Standard
PCB	10 mg/kg
Groundwater Contaminant	**Cleanup Standard**
PCB	0.5 µg/l

In-Place Treated Soil Performance Standards:

Soil Contaminant	Toxicity Characteristic
PCB	60 µg/l
Geotechnical Test	**Performance Standard**
Compressive Strength	50 p.s.i.

Compliance with ARARs

At this time, the Site is in compliance with all ARARs identified in the ROD.

F. Groundwater Data Review

Quarterly groundwater monitoring began in August 1996. Water levels were measured at 20 monitoring wells and 18 monitoring wells were sampled for PCBs (see Tables 2 and 5). The two monitoring wells not included in groundwater sampling are MW-9A and MW-9B. The location of the monitoring wells is shown on Figure 5.

Since the construction of the monolith, PCBs have been detected in only one monitoring well (MW-7B at 2 µg/l) during one sampling event (November 1996). All other groundwater samples taken revealed a non-detect for PCBs. After six consecutive quarters of sampling the eighteen monitoring wells, the PRP's representative requested to abandon several of these monitoring wells. The two monitoring wells that will be left for monitoring are MW-6A and MW-11A (Photographs 15 and 16). Both of these wells are shallow monitoring wells that are situated within the monolith. The USEPA approved this proposal and issued an ESD to the OU2 ROD revising the required monitoring.

Presently, the two Site monitoring wells are being sampled on a semi-annual basis with the next sampling event scheduled for November 2000. There has not been a detection of PCBs during any sampling event from either of these two monitoring wells.

VI. Assessment

The results of remedial action are contained in Section IV, Paragraph “D”, Subparagraph “Remedial Action.” As discussed in that section, the remedial objectives were effectively addressed by each of the major components of remedial action.

In summary:

1. Contaminated soils have been effectively treated through on-site solidification/stabilization. At present, the majority of the surficial cover of the monolith is in fair condition and protects the stabilized/solidified material from degradation. However, there were areas of the vegetative cover that should be seeded to preclude any erosion of the cover. Although the potential for contaminant leaching is very low (based on the adequacy of the protective vegetative cover, the results of performance tests, and in-situ permeability testing), continued groundwater monitoring should be conducted to confirm that leaching is not occurring.

2. Groundwater has been minimally affected by the PCBs. As a result of several quarters of post remedial groundwater monitoring, an ESD has been issued removing the requirement for OU2 groundwater monitoring. Groundwater is still being monitored within the confinements of the monolith twice a year with a recommendation to reduce the monitoring to once a year.

3. Based on the foregoing, it appears that all remedial objectives for both OU1 and OU2 have been met. Monitoring of the groundwater and inspection and maintenance of the landfill should continue to ensure long-term protectiveness.

Adequacy of O&M

The plan for continued O&M activities is judged to be adequate at this time.

VII. Deficiencies

The following minor deficiency was discovered during the Five-Year Review. This deficiency is not judged to affect the current protectiveness of the remedy, but should be addressed during site inspections in order to ensure long-term protectiveness.

Vegetative Cover. Areas of the vegetative cover lacked an adequate stand of grass. Most of these barren areas are located on the side slopes of the cap where there is a greater potential for erosion effects. Photographs 2, 5 17, 21 and 22 illustrate some of these barren areas.

VIII. Recommendations

The following recommendation is made to address the deficiency noted above. This deficiency is not judged to affect the current protectiveness of the remedy, but should be addressed during site inspections in order to ensure long-term protectiveness. The PRP is responsible for addressing the noted deficiency and the EPA serves as the oversight agency. This recommendation should be completed during the next semiannual inspection, which should occur in November 2000.

Vegetative Cover. Purchase a mixture of grass seed in accordance with design requirements as noted on Table 4 and apply this seed mixture in barren areas with an erosion control mat or mulch during the semi-annual inspection. Continue to sew grass seed in barren areas during subsequent inspections.

Another recommendation is to reduce the frequency of groundwater sampling from semi-annual to annual. Table 2 presents a summary of groundwater monitoring data from August 1996 to May 2000. This table shows that there has been no detection of PCBs in the groundwater since November 1996.

IX. Protectiveness Statement

The selected remedy, as executed, currently remains protective of human health and the environment. Continued site inspections and groundwater monitoring should be conducted to ensure long-term protectiveness.

X. Next Review

This is a statutory site that requires ongoing Five-Year Reviews as long as hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure. The presence of the solidified monolith, which contains elevated concentrations of PCBs, prohibits unlimited use of that portion of the Site. Therefore, ongoing 5-year reviews are required. EPA Region IV should conduct the next review within five years of the signature date of this report.

Figures

Note: These figures were taken from the following documents:

Figure 1- Site Location Map: Conestoga-Rovers & Associates, Final Remedial Investigation Report, Yellow Water Road Site, April 1990

Figure 2- Site Layout Map: U.S. Environmental Protection Agency, Record of Decision, Yellow Water Road Site, September 1990

Figure 3- Geologic Cross Section: Conestoga-Rovers & Associates, Final Investigation Report, Yellow Water Road Site, April 1990

Figure 4- Monitoring Well Locations: U.S. Environmental Protection Agency, Record of Decision, Yellow Water Road Site, June 1992

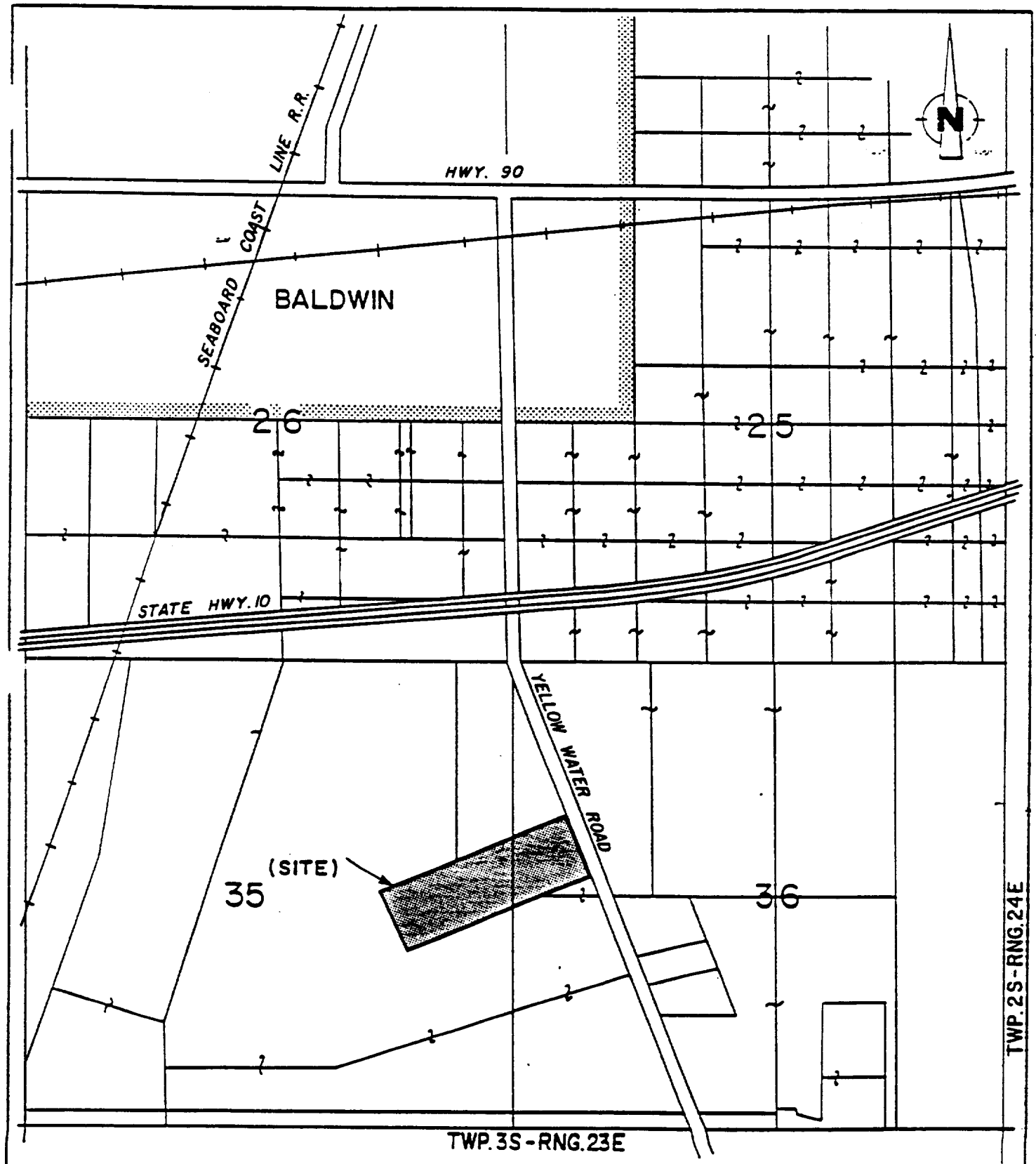
Figure 5- Soil Boring Locations: U.S. Environmental Protection Agency, Record of Decision, Yellow Water Road Site, April 1990

Figure 6- Soil Boring Locations: U.S. Environmental Protection Agency, Record of Decision, Yellow Water Road Site, April 1990

Figure 7: Excavation Progress – Area I: Conestoga-Rovers & Associates, Remedial Action Report, Yellow Water Road Site, November 1996

Figure 8: Excavation Progress – Area II: Conestoga-Rovers & Associates, Remedial Action Report, Yellow Water Road Site, November 1996

Figure 9: Excavation Progress – Areas III and IV: Conestoga-Rovers & Associates, Remedial Action Report, Yellow Water Road Site, November 1996



NOTE: BASED ON 1984 DUVAL COUNTY OWNERSHIP PLAT

NOT TO SCALE

figure 1

YELLOW WATER ROAD SITE
Baldwin, Florida

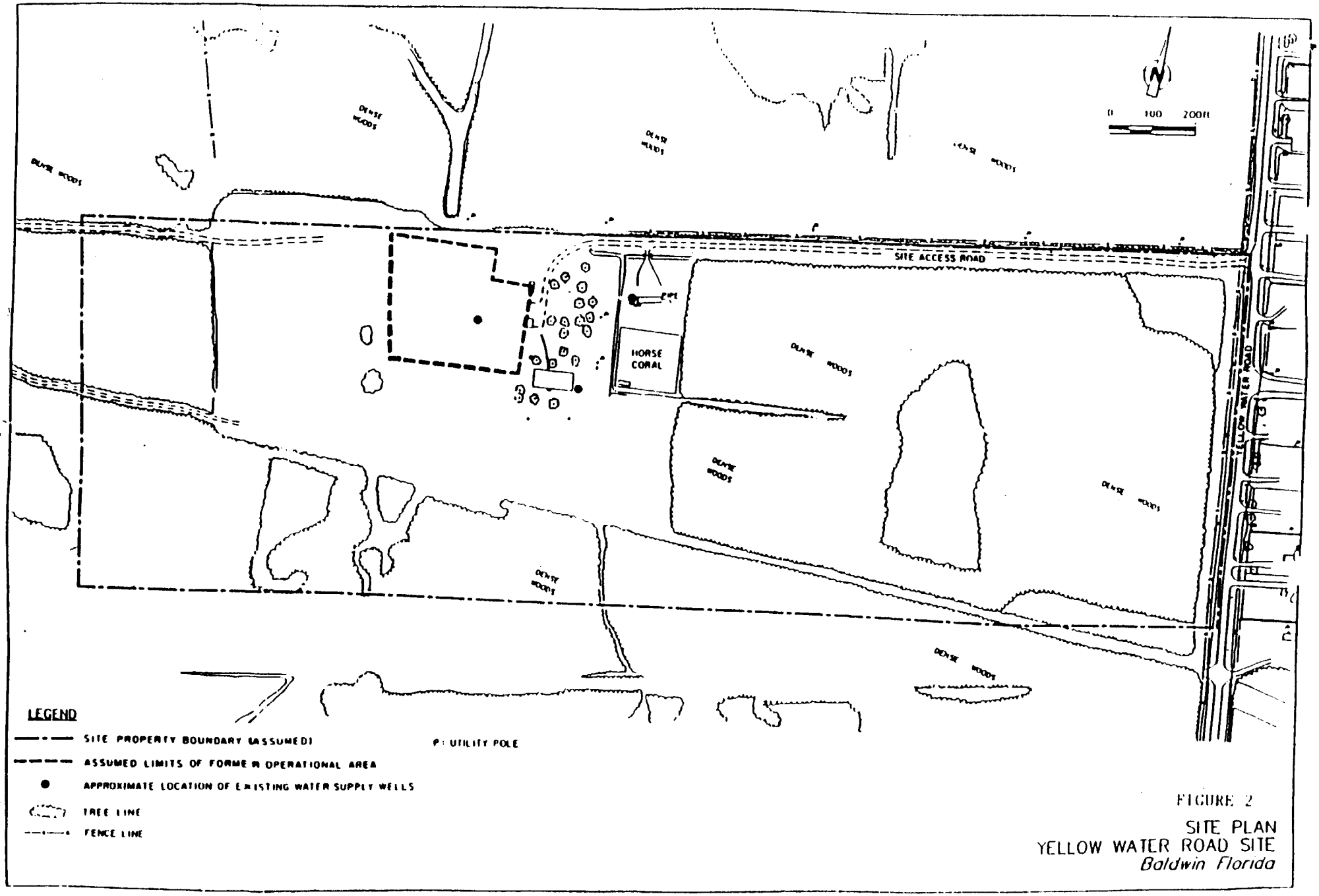


FIGURE 2

SITE PLAN
YELLOW WATER ROAD SITE
Baldwin Florida

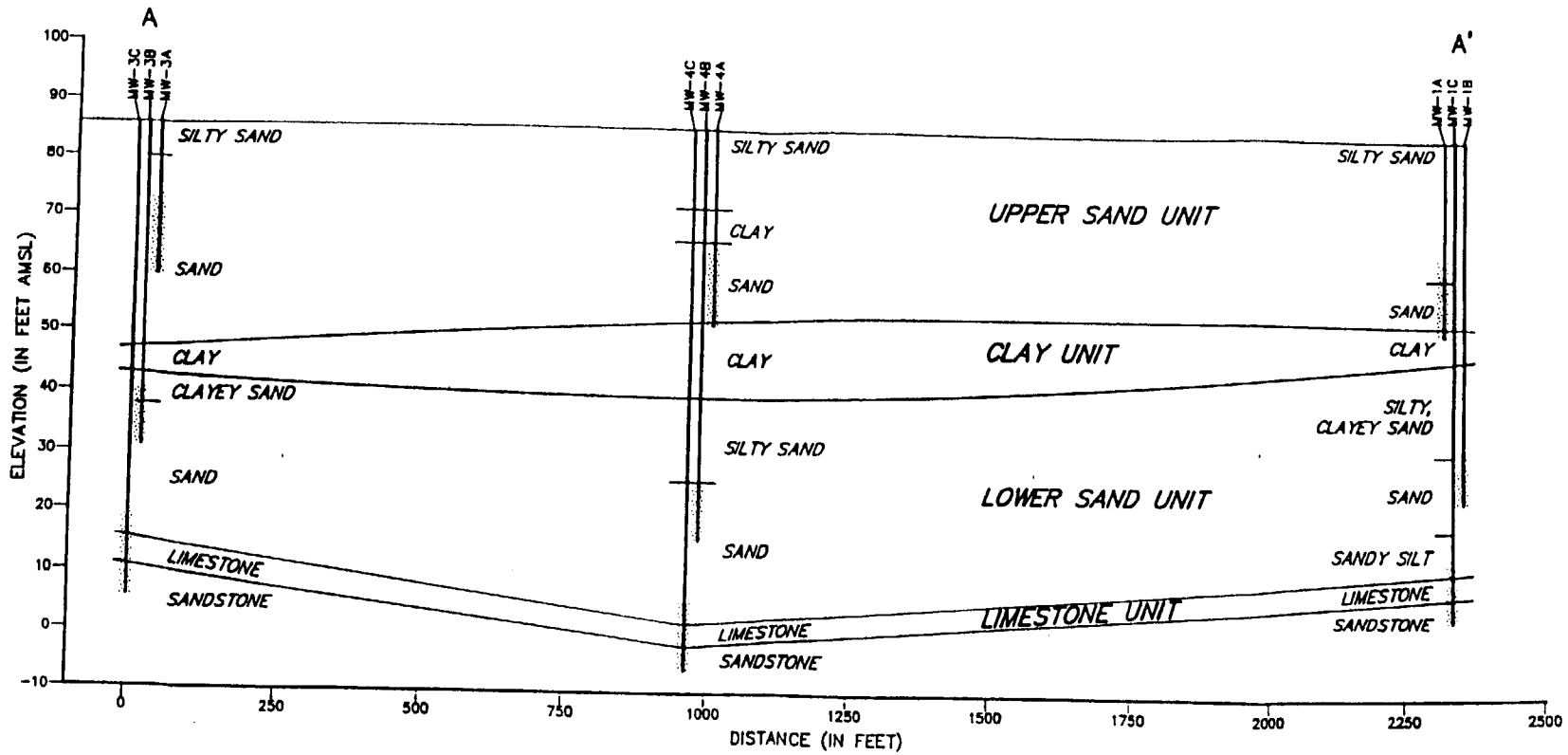


figure 3

GEOLOGIC CROSS-SECTION A-A'
YELLOW WATER ROAD SITE
Baldwin, Florida

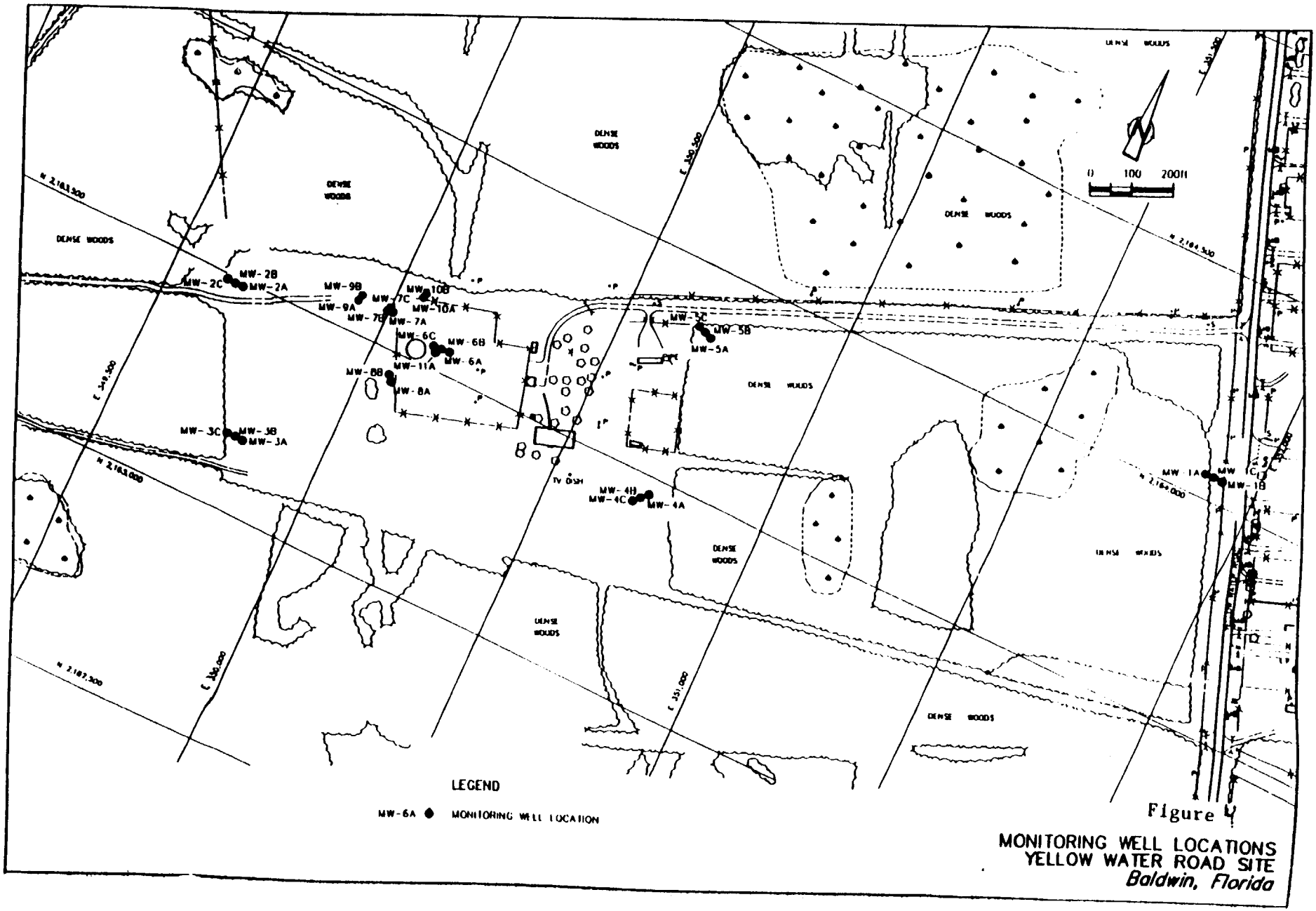
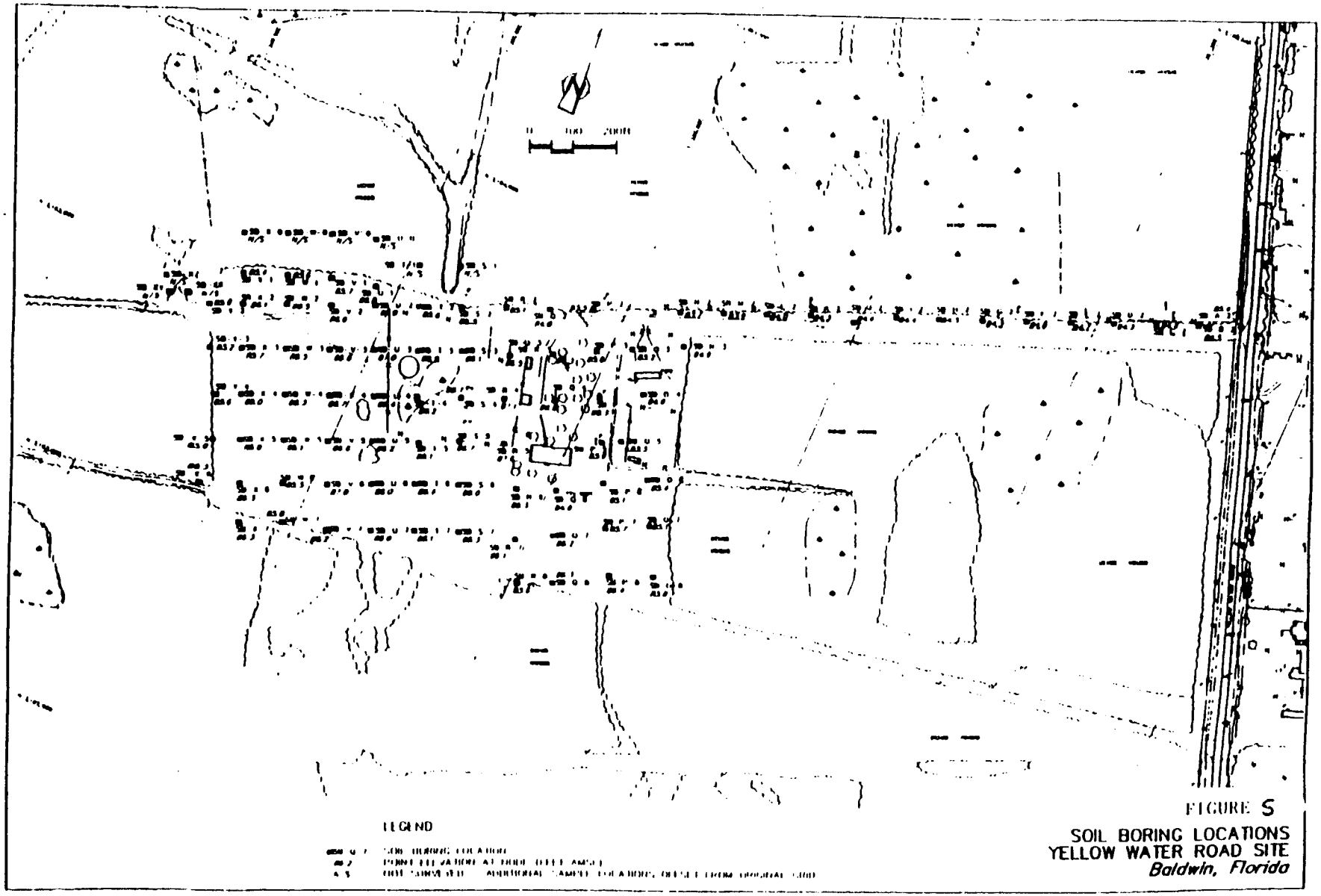


Figure 4

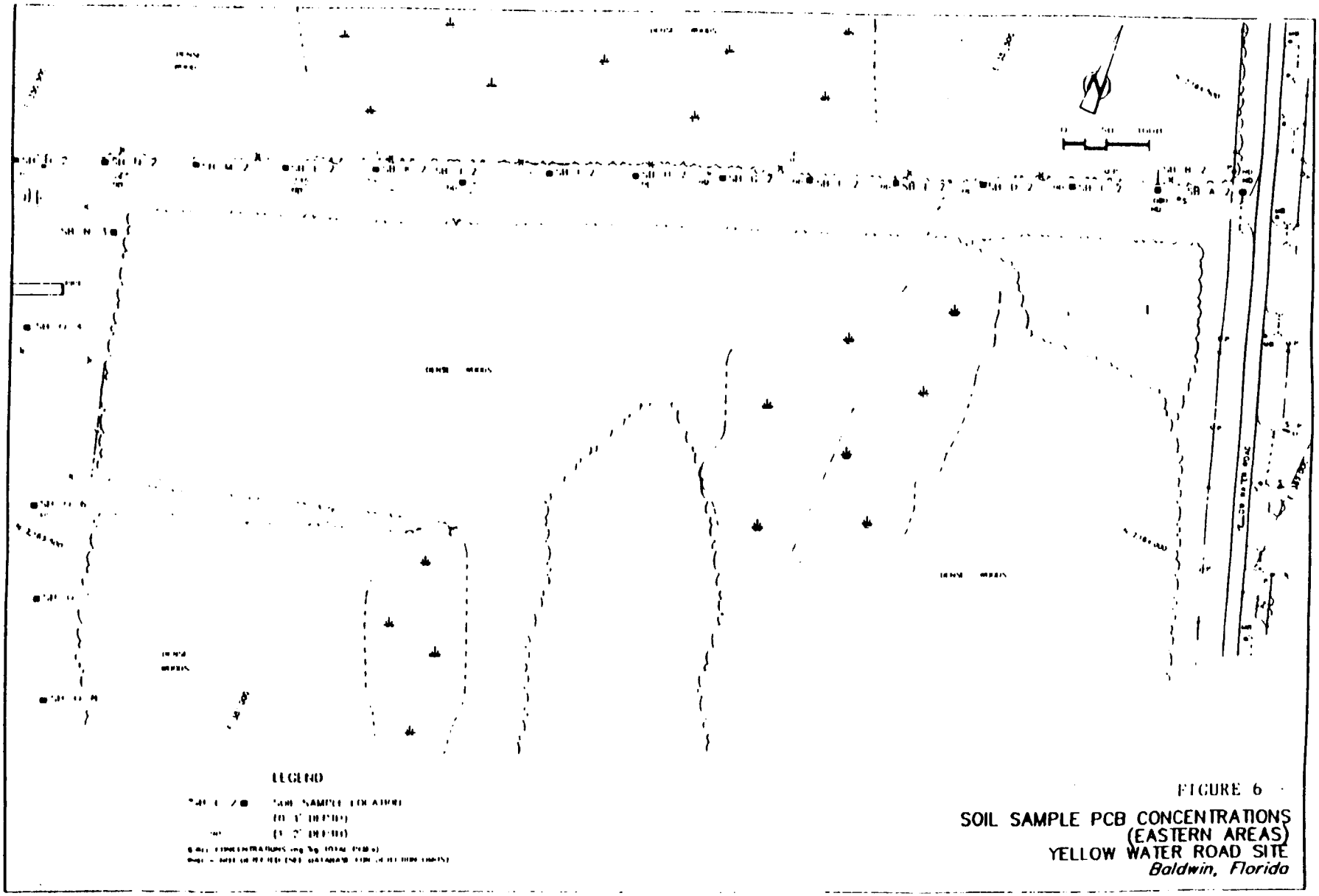
MONITORING WELL LOCATIONS
YELLOW WATER ROAD SITE
Baldwin, Florida



LEGEND

FIGURE 5

SOIL BORING LOCATIONS
YELLOW WATER ROAD SITE
Baldwin, Florida



LEGEND

FIGURE 6

SOIL SAMPLE PCB CONCENTRATIONS
(EASTERN AREAS)
YELLOW WATER ROAD SITE
Baldwin, Florida

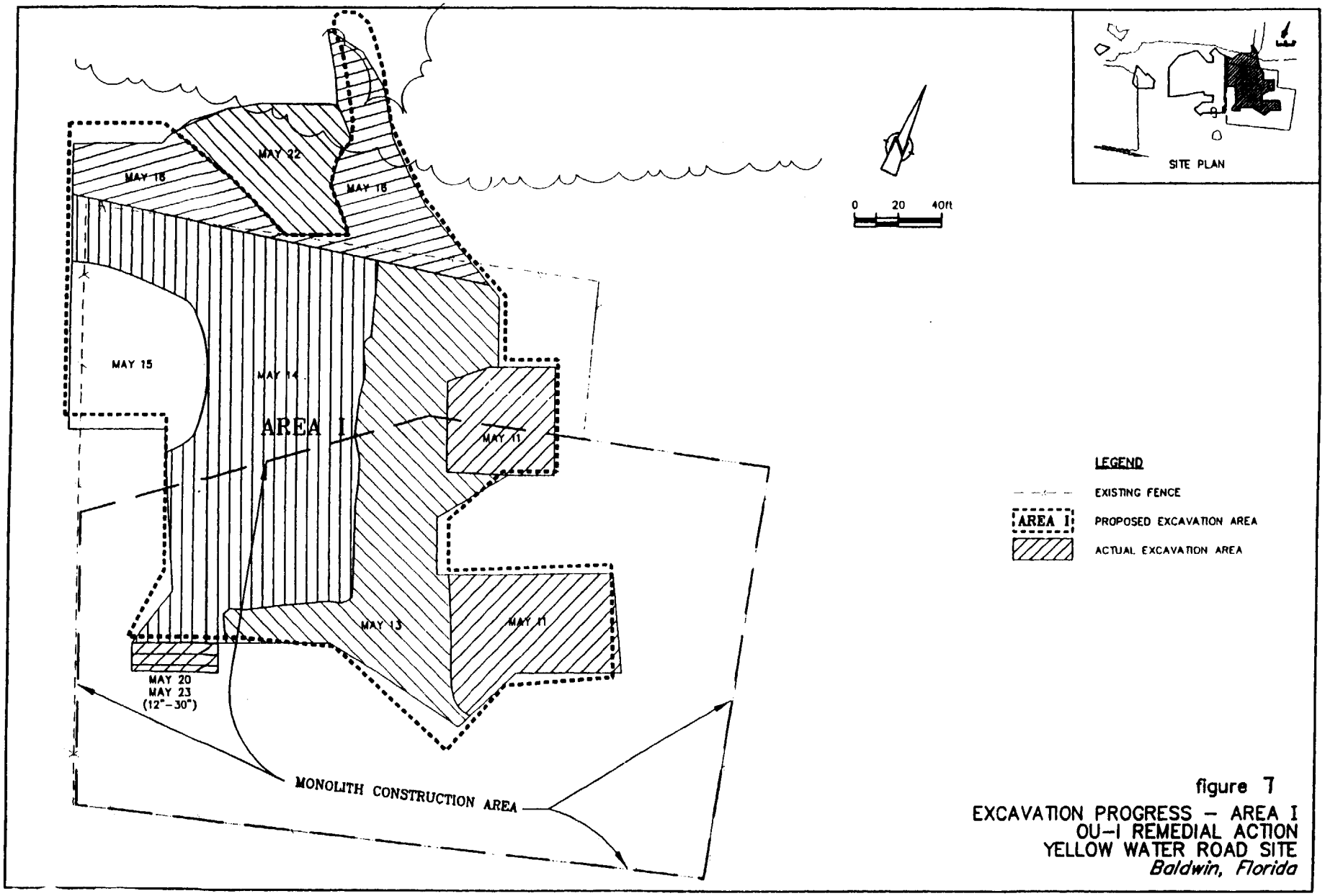


figure 7

EXCAVATION PROGRESS – AREA I
OU–1 REMEDIAL ACTION
YELLOW WATER ROAD SITE
Baldwin, Florida

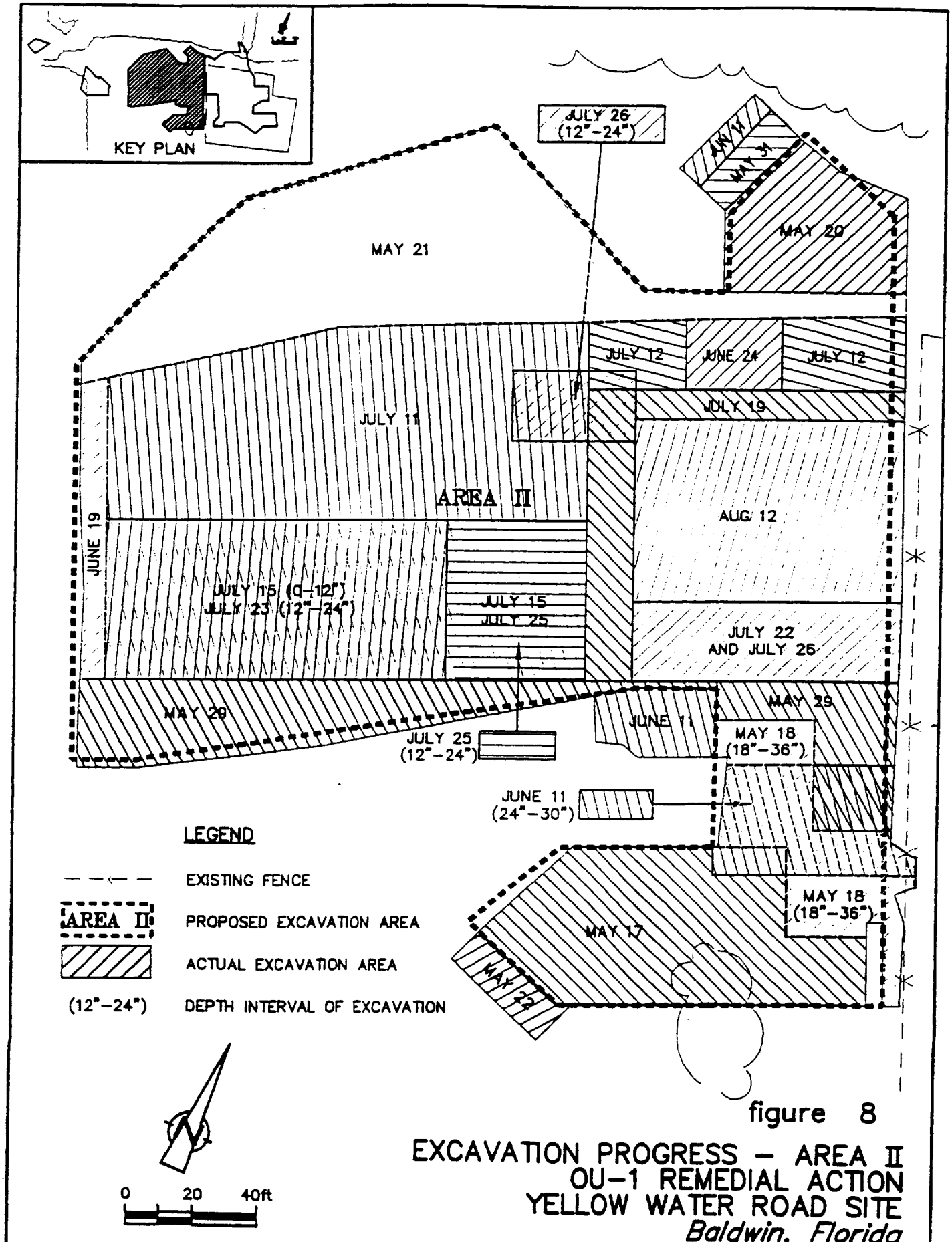


figure 8

EXCAVATION PROGRESS – AREA II
OU-1 REMEDIAL ACTION
YELLOW WATER ROAD SITE
Baldwin, Florida

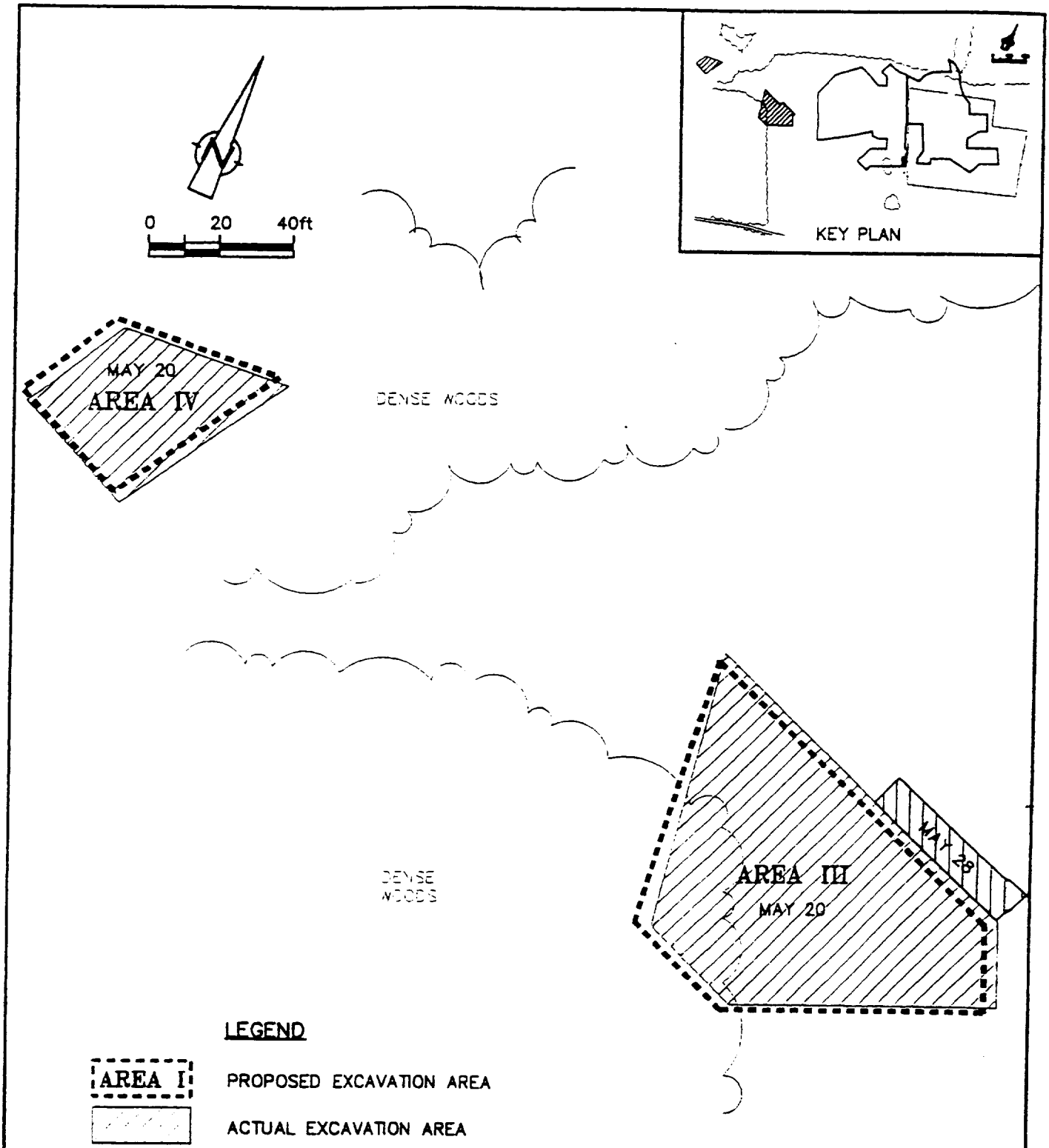


figure 9

EXCAVATION PROGRESS – AREAS III AND IV
OU–1 REMEDIAL ACTION
YELLOW WATER ROAD SITE
Baldwin, Florida

Tables

Table 1- Chronology of Site Events

Event	Date
Commercial Development of Site Commenced	November 1981
Duval County cites Mr. Tyer, as president of American Environmental Energy Corporation for violations of local PCB storage ordinances.	Fall 1984
Initial Removal Action by EPA	November 1984
FDEP issues notice to various principals of AEC and AEEC that Site was in violation of State Drinking Water Standards	March 1985
EPA issues an order to Mr. Tyer compelling him to cease various site-related activities.	June 1985
Yellow Water Road Site placed on NPL	June 1986
EPA and Steering Committee enter into an Administrative Order by Consent.	September 1987
Steering Committee undertake an interim surface removal action under EPA oversight.	May 1988
RI Report	April 1980
FS Report	August 1990
ROD for OU1	September 1990
ROD for OU2	June 1992
Remedial Design for OU1	November 1992
Construction Start	May 1996
Construction Complete	October 1996
ESD for OU2	April 1998
Notice of Intent to Delete, EPA Region IV	December 1998
Notice of Deletion	May 1999
Five Year Review	August 2000

Table 2 – Summary of Groundwater Monitoring Data from Construction of Remedy (August 1996) to Current Groundwater Concentrations (May 2000)

Monitoring Well Number	8/96	11/96	2/97	5/97	8/97	11/97	5/98	11/98	6/99	12/99	5/00
MW-1A	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-1B	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-1C	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
RMW-6A	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
RMW-6B	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
RMW-6C	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-7A	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-7B	ND	2 UG/L	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-7C	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-8A	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-8B	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-10A	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-10B	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-12A	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-12B	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-13A	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-13B	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA

ND – Not detected at Practical Quantitation Limit (PQL) of 0.5 ug/l.
NA – Not analyzed

Table 3

OPERATION, MONITORING AND SITE MAINTENANCE BUDGET ESTIMATE
MAY 1999 - DECEMBER 2004
YELLOW WATER ROAD SITE
BALDWIN, FLORIDA

	Description	Unit Cost	Number of Events	Total Estimated Cost
A)	SITE MONITORING ACTIVITIES			
1)	Semi-Annual Site Inspections			
i)	Evaluation of the presence of, or potential for, surface cover failures and/or intrusions, including settlement, surface cracking, establishment of deep-rooted vegetation, animal burrow holes, wash-outs, soil erosion, etc; assessment, of security-related controls (site fencing, gates, signs and locks); vegetative cover inspection; and removal of nascent shallow-rooted woody-vegetation to the extent possible.	$ 3,000	12	$ 36,000
ii)	Development of draft and final semi-annual inspection reports complete with fully completed inspection and maintenance log documentation required by the OMMP; and submission of the final drafts to U.S.EPA, DRMS and FDEP.	$ 1,500	12	$ 18,000
	Subtotal - Item B, Site inspections			$ 54,000
2)	Groundwater Monitoring - OU-1			
i)	Sampling, sample analysis, monitoring well integrity assessments, water level elevation measurements, purging, low-flow sampling, field measurements for pH, turbidity, conductivity, etc. - MW-6A and MW-11A only	$ 2,200	12	$ 26,400
ii)	Development of draft and final groundwater monitoring reports with submission of final drafts to U.S.EPA, Defense Reutilization and Marketing Service (DRMS) and Florida Department of Environmental Protection (FDEP)	$ 1,500	12	$ 18,000
	Subtotal - Item 2, Groundwater Monitoring			$ 44,400
	TOTAL ESTIMATED SITE MONITORING COSTS			$ 98,400
	Assumes this activity conducted currently with the Semi-Annual Site Inspections.			

	Description	Unit Cost	Number of Events	Total Estimated Cost
B)	ESTIMATE SITE MAINTENANCE COSTS			
I)	July - December 1999, Site Maintenance Costs	$ 12,000	1	$12,000
ii)	January 2000 - December 2004, Site Maintenance Cost	$ 10,000	5	$ 50,000
	TOTAL ESTIMATED SITE MONITORING COSTS			$62,000
C)	WELL ABANDONMENT COSTS			
		$ 27,000	1	$ 27,000
i)	May/June 1999			
				$ 27,000
	TOTAL ESTIMATED WELL ABANDONMENT COSTS			
	GRAND TOTAL - ITEMS A THROUGH C			$ 187,400

TABLE 4

SEEDING MIXTURES
YELLOW WATER ROAD SITE
BALDWIN, FLORIDA

Seed Type	*lbs, PLS/acre*
Warm Season (March 1 to August 15)	
Scarified Bahiagrass	30
Hulled Common Bermuda Grass	10
Sericea Lespedeza	25
Brown Top Millet (Nursing Crop)	30
Cool Season (October 1 to November 15)	
Scarified Bahiagrass	30
Hulled Common Bermuda Grass	10
Sericea Lespedeza	25
Ryegrass (Nursing Crop)	15

Table 5 – Summary of Groundwater Elevational Data from Construction of Remedy (August 1996 to Current Groundwater Concentrations (May 2000)

Monitoring Well Number	8/96	11/96	2/97	5/97	8/97	11/97	5/98	6/99	12/99	5/00
MW-1A	84.14	83.23	84.94	84.77	85.19	84.90	NA	NA	NA	NA
MW-1B	83.34	82.57	84.24	83.62	84.42	84.12	NA	NA	NA	NA
MW-1C	83.08	82.34	83.93	83.40	83.95	83.86	NA	NA	NA	NA
RMW-6A	83.77	82.73	84.45	83.72	84.96	84.23	82.45	79.93	81.89	80.73
RMW-6B	82.81	82.04	83.74	82.91	84.02	83.64	NA	NA	NA	NA
RMW-6C	82.83	82.02	83.72	82.90	84.02	83.63	NA	NA	NA	NA
MW-7A	83.79	82.70	84.44	83.73	84.99	84.16	NA	NA	NA	NA
MW-7B	82.73	81.90	83.59	82.78	83.89	83.49	NA	NA	NA	NA
MW-7C	82.60	81.90	83.58	82.78	83.90	83.50	NA	NA	NA	NA
MW-8A	83.58	82.55	84.39	83.14	85.12	84.14	NA	NA	NA	NA
MW-8B	82.76	81.94	83.63	83.29	83.93	83.51	NA	NA	NA	NA
MW-10A	83.52	82.50	84.24	82.78	84.65	84.03	NA	NA	NA	NA
MW-10B	82.79	81.89	83.64	83.76	83.91	83.49	NA	NA	NA	NA
MW-11	83.81	82.70	84.50	83.76	84.99	84.22	82.31	79.96	81.94	80.75
MW-12A	83.50	82.49	78.90	83.57	85.06	84.08	NA	NA	NA	NA
MW-12B	82.77	81.95	78.17	82.82	83.97	83.57	NA	NA	NA	NA
MW-13A	83.59	82.57	84.30	83.58	84.85	84.12	NA	NA	NA	NA
MW-13B	82.74	81.91	83.59	82.78	83.90	83.49	NA	NA	NA	NA

Attachment A

Documents Reviewed

Reports

(CRA, 1990) Conestoga-Rovers & Associates, Final RI Report, April 1990

(EPA, 1990) U.S. Environmental Protection Agency, Record of Decision, September 1990

(EPA, 1992) U.S. Environmental Protection Agency, Record of Decision, June 1992

(CRA, 1992) Conestoga-Rovers & Associates, Remedial Design – Operable Unit 1, September 1992

(CRA, 1996a) Conestoga-Rovers & Associates, Remedial Action Report, November 1996

(CRA, 1996b) Conestoga-Rovers & Associates, Operation, Maintenance and Monitoring Plan, November 1996

(EPA, 1996) U.S. Environmental Protection Agency, PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures, EPA/600/P-96/001F, September 1996

(EPA, 1998a) U.S. Environmental Protection Agency, Explanation of Significant Differences, March 1998

(EPA, 1998b) U.S. Environmental Protection Agency, Final Close Out Report, May, 1998

Periodical Reports

(CRA, May 1997 – May 2000) Conestoga-Rovers & Associates, Operation, Maintenance and Monitoring Reports; Period Covered: May 1997 through May 2000

(CRA, August 1996 – May 2000) Conestoga-Rovers & Associates, Groundwater Monitoring Results; Period Covered: August 1996 through May 2000

Attachment B

Site Inspection Checklist

Please note that "O&M" is referred to throughout this document. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the five-year review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION

Site name: YELLOW WATER ROAD	Date of inspection: JUNE 27, 2000
Location and Region: BALDWIN, FLORIDA / REGION IV	EPA ID: FLD 980844179
Agency, office or company leading the five-year review: U.S. ARMY CORPS OF ENGINEERS	Weather/temperature: PARTLY CLOUDY - 80° F

Remedy includes (Check all that apply)
- ☒ Landfill cover/containment
- ☒ Groundwater pump and treatment
- ☒ Surface water collection and treatment
- ☒ Other _____

☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1 Site manager BRUCE CLEGG (Name) PROJECT MANAGER (Title) JUNE 27 200 (Date)
Interviewed ☒ at site ☐ at office ☐ by phone Phone no. 773-380-9933
Problems, suggestions; ☐ Report attached _____

2 BRUCE NOBLE (Name) ENV. PROTECTION SPECIALIST (Title) JUNE 27, 2000 (Date)
Interviewed ☒ at site ☐ at office ☐ by phone Phone no. 616-961-7412
Problems, suggestions; ☐ Report attached _____

3. Local regulatory authorities and response agencies (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

4. Other interviews (optional) ☐ Report attached.

III. ONSITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Manual and As-Builts** ☒ Readily available ☐ Up to date ☐ N/A
   ☐ As-builts ☐ Readily available ☐ Up to date ☐ N/A
   ☐ Maintenance Logs ☐ Readily available ☐ Up to date ☐ N/A
   Remarks BRUCE CLEGG BROUGT HIS PERSONAL COPY OF O&M MANUAL & AS-BUILTS

2. **Site Specific Health and Safety Plan** ☐ Readily available ☐ Up to date ☐ N/A
   ☐ Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☐ N/A
   Remarks INSPECTOR BRINGS A COPY OF HEALTH & SAFETY PLAN WITH HIM DURING INSPECTIONS.

3.. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☐ N/A
   Remarks BRUCE CLEGG NOTED COPIES OF RECORDS ARE AVAILABLE AT HOME OFFICE

4. **Permits and Service Agreements**
   ☐ Air discharge permit ☐ Readily available ☐ Up to date ☒ N/A
   ☐ Effluent discharge ☐ Readily available ☐ Up to date ☒ N/A
   ☐ Waste disposal, POTW ☐ Readily available ☐ Up to date ☒ N/A
   ☐ Other permits _____ ☐ Readily available ☐ Up to date ☒ N/A
   Remarks NO OPERATIONAL PERMITS REQUIRED

5. **Gas Generation Records** ☐ Readily available ☐ Up to date ☒ N/A
   Remarks

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date ☐ N/A
   Remarks LAST SURVEY WAS PERFORMED IN SEPT 1996

7. **Groundwater Monitoring Records** ☐ Readily available ☐ Up to date ☐ N/A
   Remarks GROUNDWATER MONITORING RECORDS ARE AVAILABLE AT HOME OFFICE

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date ☒ N/A
   Remarks

9. **Discharge Compliance Records**
   ☐ Air ☐ Readily available ☐ Up to date ☒ N/A
   ☐ Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A
   Remarks

10. **Daily Access/Security Logs**
☐ Readily available ☐ Up to date ☒ N/A
Remarks_____

_____

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
PRP in-house ☒ Contractor for PRP
☐ Other _____

_____

2. **O&M Cost Records**
☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate_____ ☐ Breakdown attached

Total annual cost by year for review period if available

From_____To_____ _____ ☐ Breakdown attached
Dates Total cost
From_____To_____ _____ ☐ Breakdown attached
Dates Total cost
From_____To_____ _____ ☐ Breakdown attached
Dates Total cost
From_____To_____ _____ ☐ Breakdown attached
Dates Total cost
From_____To_____ _____ ☐ Breakdown attached
Dates Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**
Describe costs and reasons: _____

_____

_____

_____

_____

_____

V. GENERAL SITE CONDITIONS

Whenever possible, actual site conditions should be documented with photographs.

A. Fencing

1.	Fencing damaged ☐ Location shown on site map ☒ Gates secured ☐ N/A Remarks FENCING IN GOOD CONDITION
B.	**Site Access**
1.	Access restrictions, signs, other security measures ☒ Location shown on map ☐ N/A Remarks
C.	**Perimeter Roads**
1.	Roads damaged ☐ Location shown on site map ☒ Roads adequate ☐ N/A Remarks
D.	**General**
1.	Vandalism/trespassing ☐ Location shown on site map ☒ No vandalism evident Remarks
2.	Land use changes onsite ☒ N/A Remarks
3.	Land use changes offsite ☒ N/A Remarks
4.	Institutional controls (site conditions imply institutional controls not being enforced) ☒ N/A Agency _____ Contact _____ _____ _____ _____ Name Title Date Phone no. Problems; suggestions; ☐ Report attached _____
	VI. LANDFILL COVERS ☐ Applicable ☐ Not applicable
A.	**Landfill Surface**
1.	**Settlement** (Low spots) ☐ Location shown on site map ☒ Settlement not evident Areal extent_____ Depth_____ Remarks

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident
Lengths_____ Widths_____ Depths_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent_____ Depth_____
Remarks MINOR EROSION PROBLEMS ON SIDE SLOPE. GEOWEB INSTALLED TO ALLEVIATE THIS PROBLEM.

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
Areal extent_____ Depth_____
Remarks ONE 4"-6" BURROW HOLE LOCATED ON SIDE OF FENCELINE. CONTRACTOR STATED THIS WOULD BE GROUTED.

5. **Vegetative Cover** ☒ Grass ☐ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks MINOR AREAS OF STRESSED VEGETATION. BAHIA GRASS USED, SEE PHOTOGRAPHS.

6. **Alternative Cover (armored rock, concrete, etc.)** ☒ N/A
Remarks_____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
Areal extent_____ Height_____
Remarks_____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
☒ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks PONDING OF WATER NEAR SUMP, THIS WAS FROM [redacted] PREVIOUS RAINFALL EVENT. SEE PHOTOGRAPH

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☒ No evidence of slope instability
Areal extent_____
Remarks_____

B. **Benches** ☐ Applicable ☒ Not applicable
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☒ N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map ☒ N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map ☒ N/A or okay
Remarks_____

C. **Letdown Channels** ☐ Applicable ☒ Not applicable
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** ☐ Location shown on site map
No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations ☒ Applicable ☐ Not applicable

1. **Gas Vents** ☐ Active ☐ Passive ☐ Properly secured/locked ☐ Functioning
☐ Routinely sampled ☐ Good condition ☐ Needs O&M ☐ Evidence of leakage at penetration
☒ N/A
Remarks_____

2. **Gas Monitoring Probes** ☐ Properly secured/locked ☐ Functioning
☐ Routinely sampled ☐ Good condition ☐ Needs O&M ☐ Evidence of leakage at penetration
☒ N/A
Remarks_____

3. **Monitoring Wells (within surface area of landfill)** ☒ Properly secured/locked
☒ Functioning ☒ Routinely sampled ☒ Good condition ☐ Needs O&M
☐ Evidence of leakage at penetration ☐ N/A
Remarks_____

4. **Leachate Extraction Wells** ☐ Properly secured/locked ☐ Functioning
☐ Routinely sampled ☐ Good condition ☐ Needs O&M
☐ Evidence of leakage at penetration ☒ N/A
Remarks_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☒ N/A
Remarks_____

E. Gas Collection and Treatment ☒ NOT APPLICABLE

1. **Gas Treatment Facilities**
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs O&M
Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
☐ Good condition ☐ Needs O&M
Remarks_____

3. **Cover Drainage Layer** ☐ Applicable ☑ Not applicable

4. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
Remarks_____

5. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
Remarks_____

6. **Detention/Sedimentation Ponds** ☐ Applicable ☒ Not applicable

7. **Siltation** Areal extent_____ Depth_____ ☐ N/A
☐ Siltation not evident
Remarks_____

8. **Erosion** Areal extent_____ Depth_____
☐ Erosion not evident
Remarks_____

9. **Outlet Works** ☐ Functioning ☐ N/A
Remarks_____

10. **Dike** ☐ Functioning ☐ N/A
Remarks_____

11. **Retaining Walls** ☐ Applicable ☒ Not applicable

12. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
Horizontal displacement_____ Vertical displacement_____
Rotational displacement_____
Remarks_____

13. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
Remarks_____

I.	**Perimeter Ditches/Off-Site Discharge** ☐ Applicable ☒ Not applicable
1.	**Siltation** ☐ Location shown on site map ☐ Siltation not evident Areal extent_____ Depth_____ Remarks_____
2.	**Vegetative Growth** ☐ Location shown on site map ☐ N/A ☐ Vegetation does not impede flow Areal extent_____ Type_____ Remarks_____
3.	**Erosion** ☐ Location shown on site map ☐ Erosion not evident Areal extent_____ Depth_____ Remarks_____
4.	**Discharge Structure** ☐ Functioning ☐ N/A Remarks_____
	VII. VERTICAL BARRIER WALLS ☐ **Applicable** ☒ **Not applicable**
1.	**Settlement** ☐ Location shown on site map ☐ Settlement not evident Areal extent_____ Depth_____ Remarks_____
2.	**Performance Monitoring** Type of monitoring_____ ☐ Performance not monitored Frequency_____ ☐ Evidence of breaching Remarks_____
	VIII. GROUNDWATER/SURFACE WATER REMEDIES ☐ **Applicable** ☒ **Not applicable**
A.	**Groundwater Extraction Wells, Pumps, and Pipelines** ☐ Applicable ☐ Not applicable

1. **Pumps, Wellhead Plumbing, and Electrical**
☐ Good condition ☐ All required wells located ☐ Needs O&M ☐ N/A
Remarks_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs O&M
Remarks_____

B. Surface Water Collection Structures, Pumps, and Pipelines
☐ Applicable ☒ Not applicable

1. **Collection Structures, Pumps, and Electrical**
☐ Good condition ☐ Needs O&M
Remarks_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs O&M
Remarks_____

C. Treatment System ☐ Applicable ☒ Not applicable

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____ ☐ Others_____
☐ Good condition ☐ Needs O&M
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____

2. **Electrical Enclosures and Panels** (properly rated and functional) ☐ N/A
☐ Good condition ☐ Needs O&M
Remarks_____

3. **Tanks, Vaults, Storage Vessels** ☐ N/A
☐ Good condition ☐ Proper secondary containment ☐ Needs O&M
Remarks_____

4.	**Discharge Structure and Appurtenances** ☐ N/A ☐ Good condition ☐ Needs O&M Remarks_____
5.	**Treatment Building(s)** ☐ N/A ☐ Good condition ☐ Needs repair ☐ Chemicals and equipment properly stored Remarks_____
6.	**Monitoring Wells** (pump and treatment remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs O&M ☐ N/A Remarks_____
D.	**Monitored Natural Attenuation**
1.	**Monitoring Wells** (natural attenuation remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs O&M ☐ N/A Remarks_____

ATTACHMENT C

INSPECTION LOG (SEMI-ANNUAL)

Inspector: _____ Date: _____

Areas: Perimeter security fence, vegetated soil cover/monolith and associated slopes, and groundwater monitoring wells.

Inspect	*Inspect for*	*Action*	*Required*	*Location Comments*
Vegetated Soil Cover/Monolith	Erosion/Washouts	Yes	No	
	Exposed Areas	Yes	No	
	Weed Growth	Yes	No	
	Tree Growth	Yes	No	
	Distressed Vegetation	Yes	No	
	Ponding	Yes	No	
	Animal Holes/Burrows	Yes	No	
	Debris on Site	Yes	No	
	Other			
Monitoring Wells	Integrity of Bollards	Yes	No	
	Integrity of Casings	Yes	No	
	Tampering, Vandalism	Yes	No	
	Security of Locks	Yes	No	
	Other			
Site Security Fence	Integrity of Fence	Yes	No	
	Integrity of Gates	Yes	No	
	Security of Locks	Yes	No	
	Placement and Integrity of Signs	Yes	No	
	Other			
Maintenance Shed	Integrity of Structure	Yes	No	
	Tampering, Vandalism	Yes	No	
	Security of Locks	Yes	No	
	Other			

INSPECTION LOG
YELLOW WATER ROAD SITE
Baldwin, Florida

CRA

ATTACHMENT C

MAINTENANCE RECORD LOG

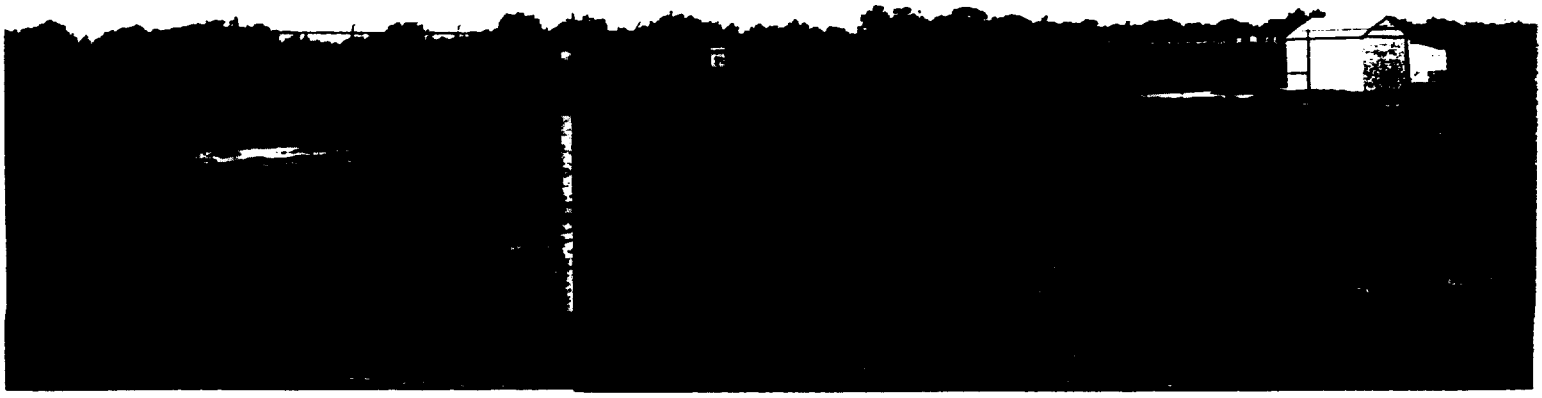
DATE	MAINTENANCE PERFORMED	PERFORMED BY	COMMENTS

MAINTENANCE RECORD LOG
YELLOW WATER ROAD SITE
Baldwin, Florida

CRA

Photographs

Photograph #1 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: View of Monolith *[facing southeast*].



Photograph #2 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: View of Monolith [*facing southwest*].

Photograph #3 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: View of East Side of Monolith [*facing north*].

Photograph #4 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: View of South Side of Monolith [*facing east*.]

Photograph #5 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: View of Ms. Hyman Residence Adjacent to Monolith [*facing east from monolith*].

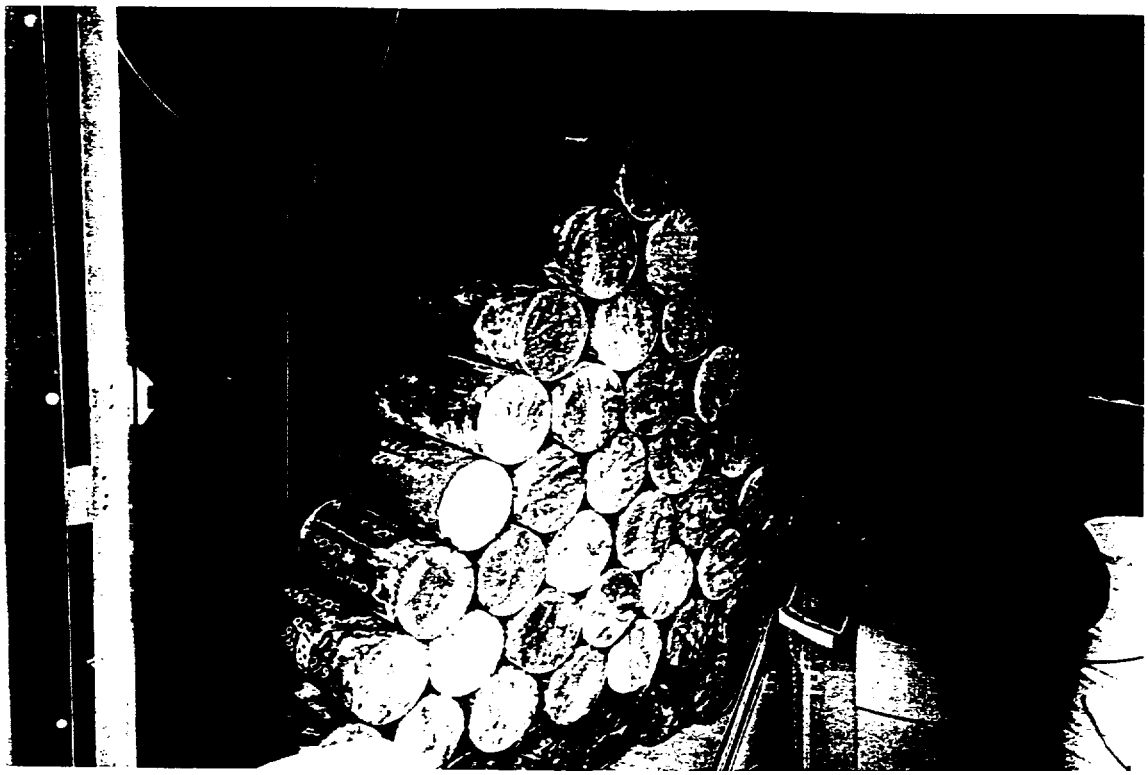
Photograph #6 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Storage Sheds east of Monolith [*facing east*].

Photograph #7 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Warning Sign.

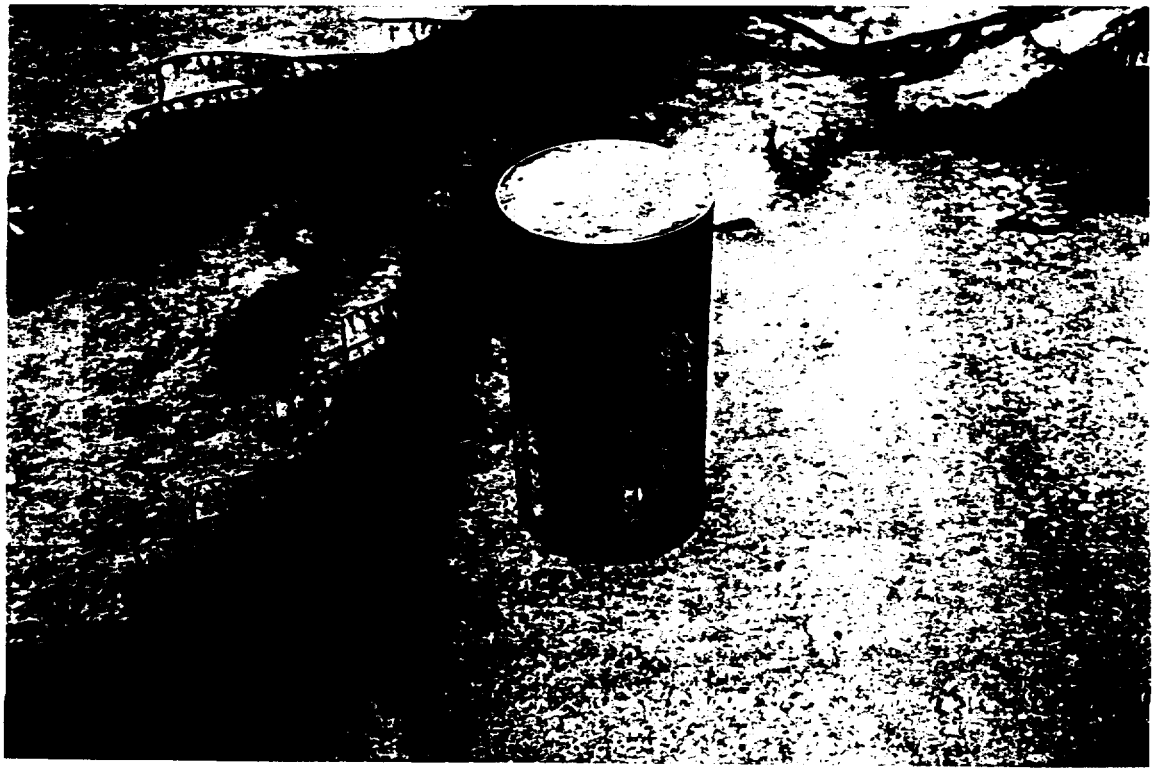
Photograph #8 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Storage Shed, Decontamination Tank, and Decontamination Pad [*facing north from Monolith*].

Photograph #9 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Equipment in Storage Shed.

Photograph #10 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Grating and Drain at Decontamination Pad.

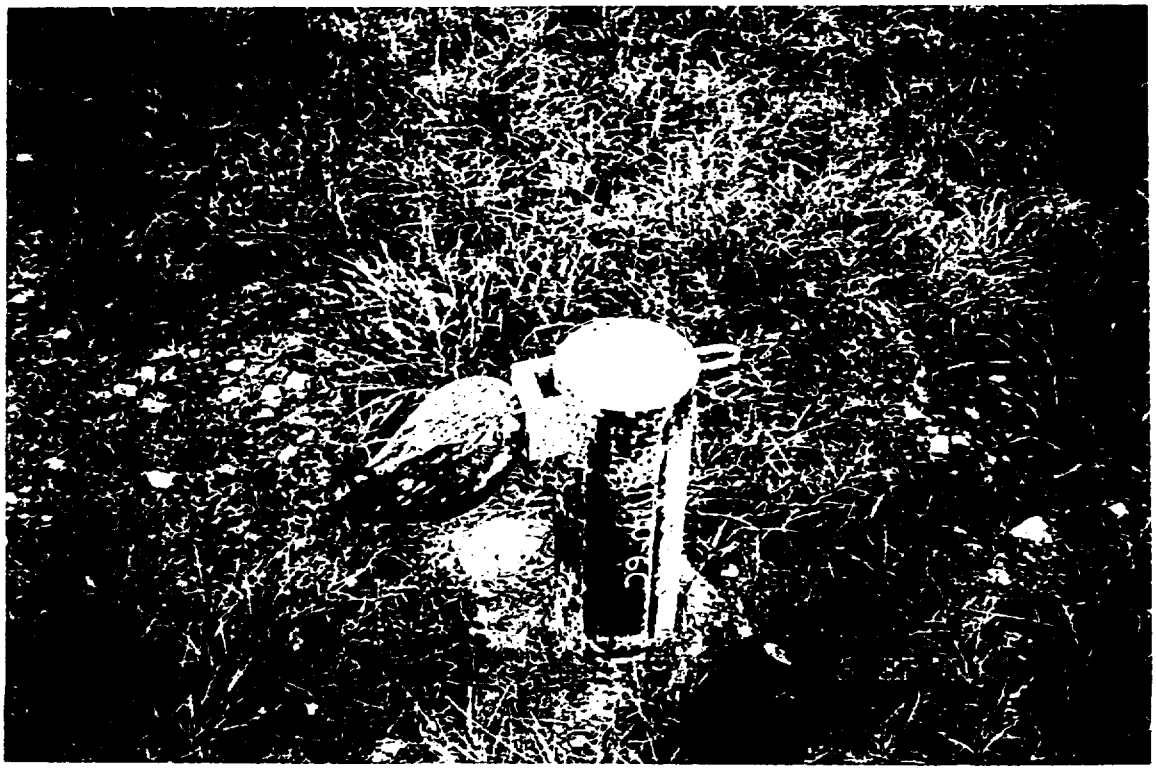


Photograph #11 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Stored Samples of Monolith Material in Storage Shed.



Photograph #12 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Solidified Sample Number 701.

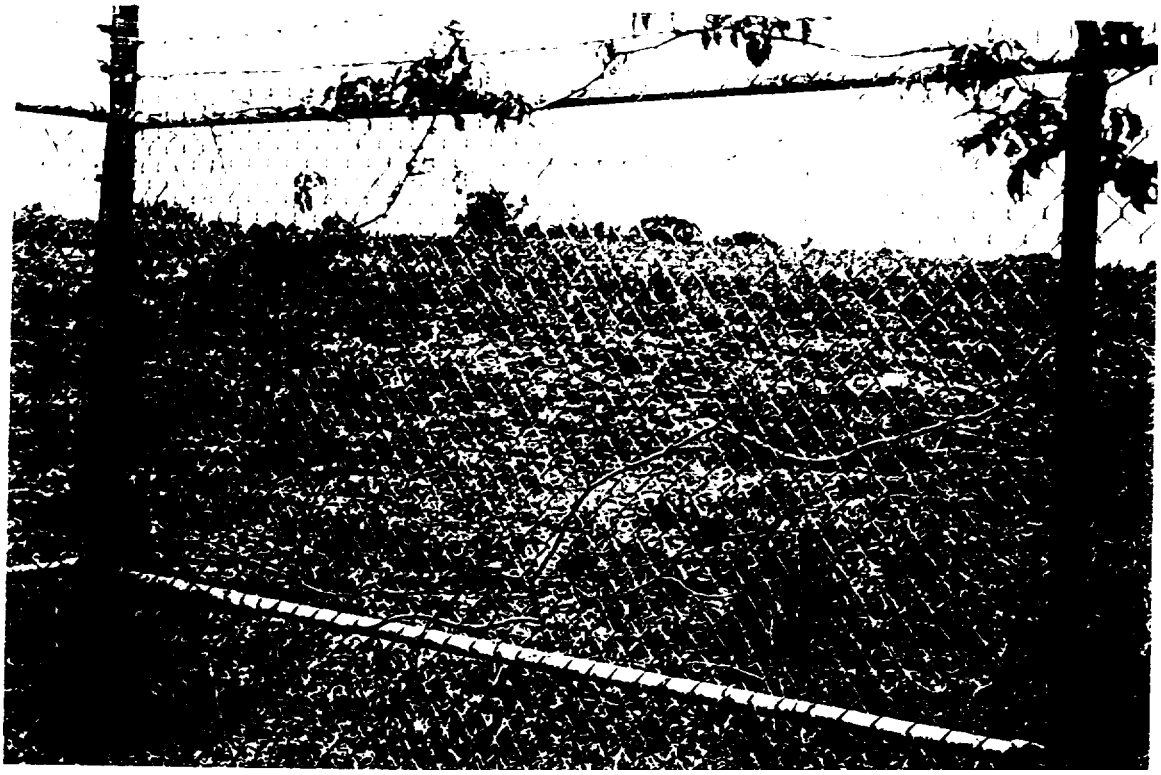
Photograph #13 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: View of Monitoring Wells and Protective Barriers [*facing northwest from monolith*].



Photograph #14 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Monitoring Well MW-6C Grouted.

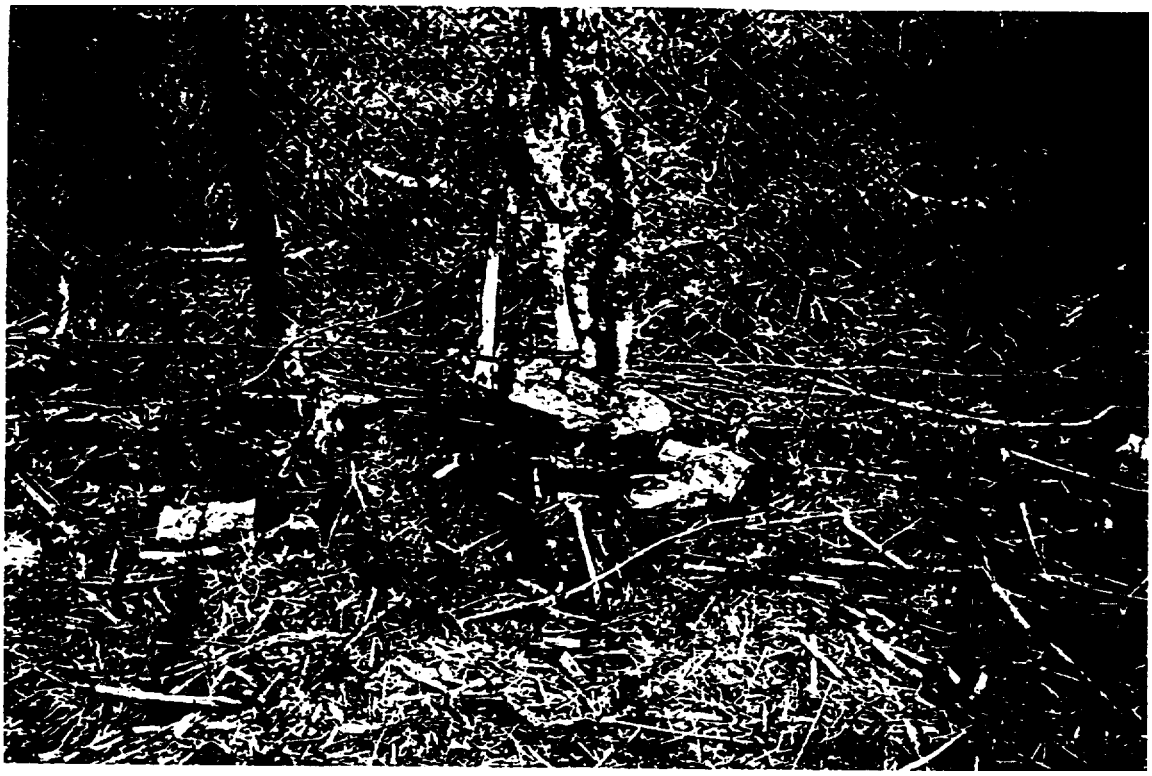
Photograph #15 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Monitoring Well MW-11.

Photograph #16 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Monitoring Well MW-6A.



Photograph #17 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Northern Side of Monolith with Geoweb Material Shown in Middle of Photo.

Photograph #18 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Close-up of Geoweb Material.



Photograph #19 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Dead Stump along Fence line.

Photograph #20 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: Animal Borehole Along Northern Fence line.

Photograph #21 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: View of south and west sides of Monolith (*facing Northeast*)

Photograph #22 **June 27, 2000**
Location: Yellow Water Road Superfund Site, Duval County, Baldwin, Florida.
Description: View of North and west sides of monolith [*facing southeast*]

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

October 3, 2000

Programs and Project Management Division
Support for Others Branch

Mr. Maher Budeir
Remedial Project Manager
U.S. Environmental Protection Agency, Region IV
Waste Management Division
61 Forsyth Street, SW.
Atlanta, Georgia 30303-3104

Dear Mr. Budeir:

Enclosed please find two copies of the final version of the Superfund Five Year Review Report for Cabot Carbon/Koppers Superfund project.

Additionally, once the Region Administrator signs Page i of this final version of the document, please replace this page in your copies and provide copies of the executed Page i per the enclosed distribution list.

If you require any further information or assistance regarding this project, please contact Mr. Stan A. Kinmonth, Project Manager, at the address above, telephone 904-232-1113, or e-mail at "stan.a.kinmonth@usace.army.mil".

Sincerely,

Richard E. Bonner, P.E.
Deputy District Engineer
for Project Management

Enclosures

Copy Furnished (without enclosure):

Mr. Ken Lucas, U.S. Environmental Protection Agency,
61 Forsyth Street, Atlanta, Georgia 30303-8960